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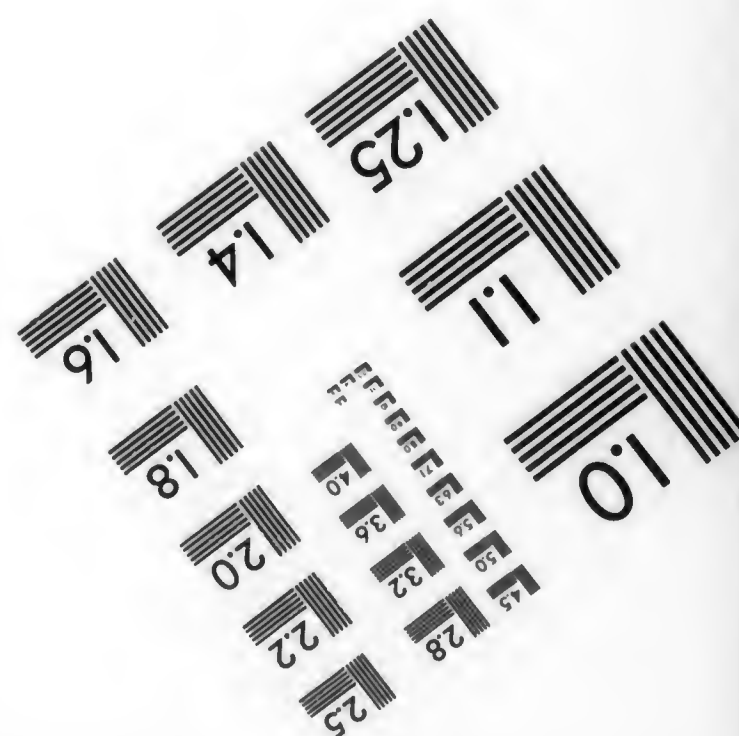
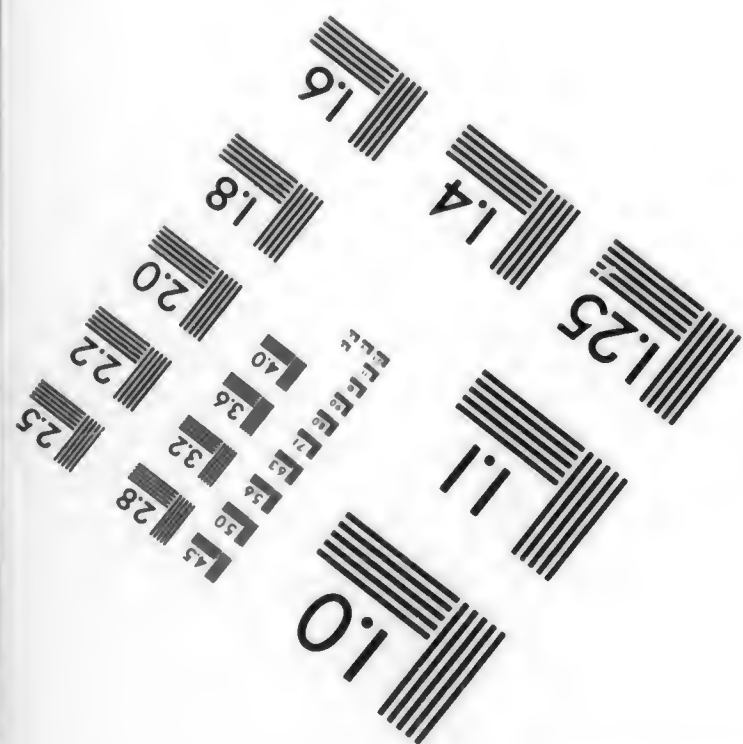
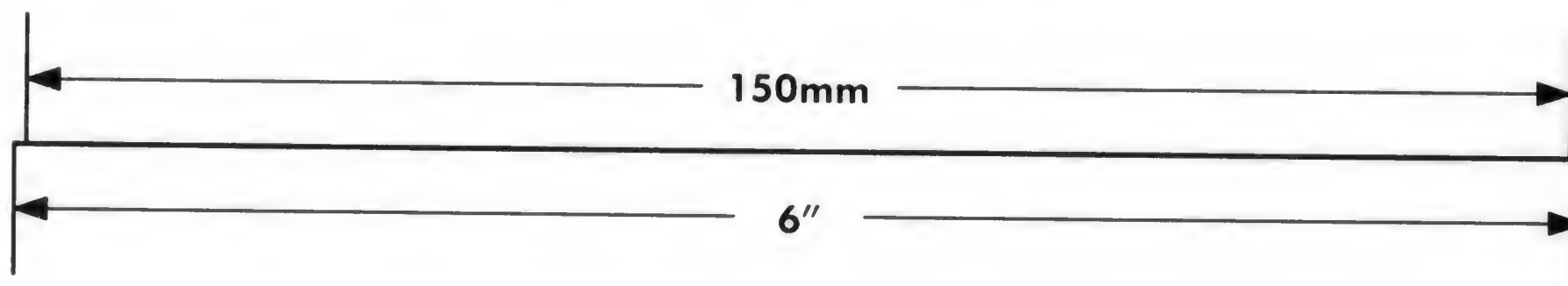
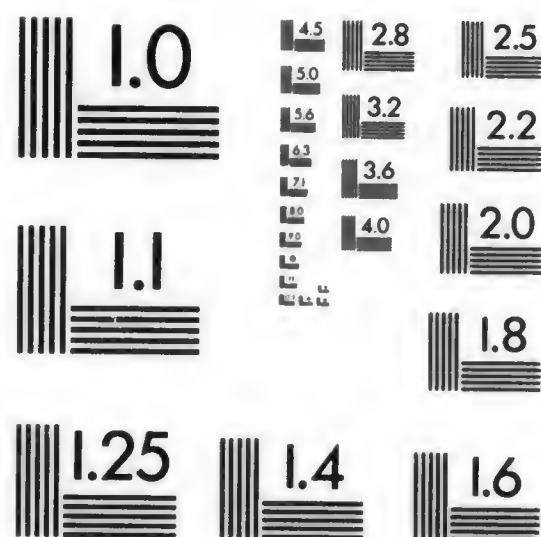
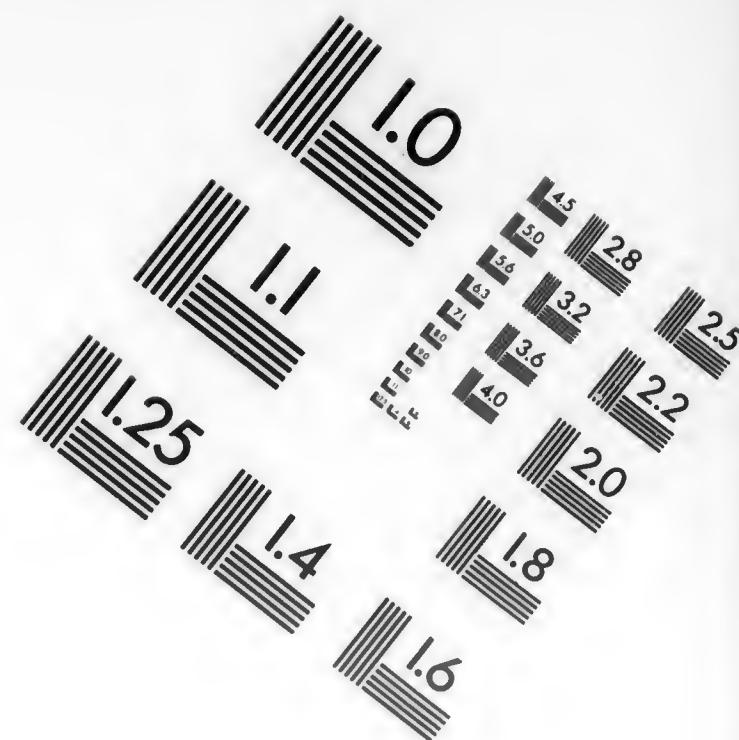
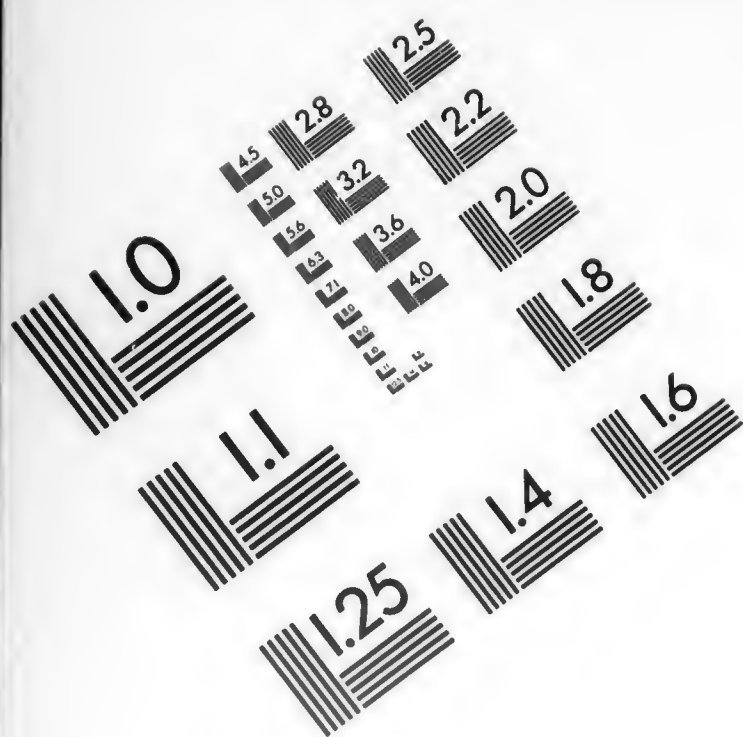
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for, and by, men and
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Number 1

Swine Production in Pennsylvania

By W. H. TOMHAVE

Professor of Animal Industry, Pennsylvania State College

WE are glad to announce that Prof. W. H. Tomhave, of Pennsylvania State College has written two articles for us on swine production in Pennsylvania. The first, we present to our readers, in this number. The second one will appear in the February 1st issue of The Practical Farmer, and will not only cover thoroughly the feeding of young pigs, rotation of crops for feed and pasture, fattening for market but directions for the construction of hog houses as well. While these articles treat of swine production in Pennsylvania, yet they apply to conditions in the neighboring states as well. Prof. Tomhave is an authority of national repute on this subject and we feel that our readers may do well to be guided by his suggestions.—The Editor.

PORK production, in the past, has not received the attention from Pennsylvania farmers to which it is entitled. It has not been developed in a way to make it a prominent part of the live stock industry in this state. It has been carried on as a side line on most farms, the result of which is that very little more than the home supply of pork has been produced. According to a recent estimate the number of hogs on the average Pennsylvania farm is about five head. This number is hardly enough to supply the demand for pork from the rural population, leaving the demand from the cities to be supplied from states in the Central West. There is a field for development along the line of pork production in Pennsylvania that will increase the amount of live stock per farm and add a source of considerable revenue.

There are two modern types of swine that may be grown with success in Pennsylvania. These are the lard and bacon types. The lard type of hog has been developed under conditions where a large amount of corn has been the principal feed. The bacon type has been developed under conditions where a considerable amount of grain, such as barley, oats, peas and mill feed has been fed. Both of these types of hogs are well adapted to Pennsylvania conditions. The lard type, represented by the Berkshire, Poland China, Duroc Jersey, Chester, White, Hampshire and several other minor breeds, is more compact in form and produces a larger amount of fat in proportion to the lean than the bacon type. The bacon type of hog, represented by the Yorkshire and Tamworth, is usually longer of body with a greater depth of middle and the ham not as well developed as the lard type.

SELECTION OF BREEDING STOCK.

There are a number of prominent breeds of swine, all of which are well adapted to the average Pennsylvania farm. The selection of the breed is largely a matter of personal preference, since all breeds are well suited to average farm conditions. It is well, however, to adopt the breed which is popular in the community in which the farm is located. The reason for this is that this will make it easier to secure desirable breeding stock without purchasing animals that have to be shipped a long distance. Once a breed has been established on a farm it is well to adhere to this particular breed. Nothing is gained by changing breeds, and very little construction work can be done in developing a herd of swine unless the breeding is carried on for a number of years. By keeping the same breed on a farm for a number of years the farmer becomes familiar with the habits and requirements of the breed selected, and he will get better results from previous experience.

The selection of desirable individuals of the breed adopted is far more important than the selection of

any particular breed. Foundation stock should be selected with care. It is desirable to know something about the sire and dam of the breeding animals purchased. Under no circumstances should a herd be established without the use of a pure-bred sire to head the herd. It frequently happens, where market hogs are to be produced, that it is more economical to purchase high-grade females than to purchase all pure-breds. These may, in many instances, be better individuals than pure-breds purchased at the same price. If these are mated with well bred, pure-bred sires, excellent market hogs can be produced. In

establishing a breeding herd it is important to secure breeding animals that conform to the standards of market requirements. The brood sow selected should be well developed with respect to size and conformation. She should be wide through the forehead with the head neatly joined to the neck and shoulders. The shoulders should be smooth and well covered over the top and sides. Depth of chest should not be overlooked. Every animal should have a well arched back and well sprung and deep ribs. Hogs with weak backs and flat ribs should never be selected, as such breeding stock will produce offspring that will

not conform to market requirements. The sides or middles should be long, deep and smooth, and free from wrinkles. The hams should be broad and well carried down over the hock. The animal should stand up well on its feet. The legs must be straight, with dense bone of good quality. The pasterns should be short and strong so as to keep the animal from breaking down in the pastern. The same points will hold true in the selection of a herd boar except that in addition he should possess a strong masculine character, which is indicated by the development of head and fore-quarters.

Prolificacy is of the utmost importance in a swine herd. The only return which the farmer receives for maintaining a brood sow during the year is the litter of pigs produced. This means that the initial cost of young pigs at the time of birth or at weaning time is determined quite largely by the number of pigs in the litter. The initial cost of pigs from a litter of four or five is much greater than from a litter of eight or nine. The average brood sow is capable of rearing and developing a litter of eight or nine pigs, which materially reduces the final cost of pork production. Prolificacy is one of the qualities that is hereditary. This is one reason why it is important to secure both males and females from large litters. If they are secured from good sized litters the breeder can feel reasonably certain that large litters will be produced. It is far more desirable to select young gilts or a herd boar from a litter of eight or nine than to select them from a litter of four or five. If some of the brood sows in a herd produce only small litters year after year it is better to dis-

pose of such pigs and secure higher producers. The number of litters to grow per year will depend somewhat upon the equipment or conveniences at hand for taking care of the swine. It is advisable to breed at least a portion of the swine for two litters per year. On many farms where a number of brood sows are kept, all of the sows should be bred for spring farrowing and only about half for fall farrowing. It is easier and more economical to develop young pigs during the summer than during the winter. Every farmer should keep a record of the

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A Contrast in Hog Raising

Digestive Diseases of the Ox

By J. K. REED

CHOKING

CHOKING is probably more of an accident than a disease, but it is a pathological condition of the digestive organs, hence we may be allowed to class it in this series. It consists in a blocking or packing of the esophagus or gullet with some foreign body. Symptoms similar to those of choking, however, arise from other causes, as injuries to the esophagus from sharp bodies swallowed, and also from injuries to the pneumogastric nerve. Impaction of foreign bodies frequently occur in the ox, but not so frequently now as in former years, as most feeders now pulp or slice the roots instead of feeding them whole.

Choking is usually caused by the lodgment in some part of the esophagus of a portion of turnip or other root, or a potato, apple, etc., but may be by impaction of other food imperfectly masticated and greedily swallowed. When stricture of the esophagus from any cause exists, choking is quite common, the bolus of food or piece of solid matter not being able to pass through the constricted tube; on the other hand, where dilatation of a portion of the tube exists, choking is also common, as the bolus being swallowed is liable to lodge in the dilated portion. This is followed by the lodgment of other boluses until the part becomes filled, when the symptoms of choking become well marked. Where no abnormal condition of the esophagus exists and reasonable care be taken to prepare solid foods, choking is of rare occurrence. The foreign body that causes the trouble may be lodged in the pharynx (the cavity just behind the root of the tongue) or in the cervical portion (that portion contained in the neck) or in the thoracic portion (that portion that passes through the thoracic or lung cavity).

SYMPTOMS.—The symptoms are readily recognized. The patient stands with muzzle protruded, coughs, champs its jaws, and there is a profuse flow of saliva from the mouth. Appetite and rumination are suspended, but ineffectual, gulping efforts are made to complete the interrupted swallow. The eyes project and become bloodshot, the patient is uneasy, and in many cases feces and urine are passed frequently in small quantities. When any matter is swallowed, or given as a drench, it is returned through the mouth and nostrils. If the impaction be in the pharynx coughing will be the best marked symptom and respiration is interfered with. If in the cervical region an enlargement can generally be located by sight or manipulation on the lower margin of the neck. This may be large or small, hard or soft, movable or immovable, according to the nature and bulk of the

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Alfalfa in the Chautauqua Grape Belt

By R. PIER WRIGHT

WE commenced growing alfalfa about ten years ago on a small experimental patch. It was reasonably successful and we have increased the acreage each year until we now have about sixty-five acres in alfalfa.

Our soil is Volusia clay loam, and the only real difficulty we have is owing to the fact that the roots occasionally are heaved out in the winter. Under-drainage seems to prevent excessive heaving, and now the bulk of our acreage is underdrained, ditches being about 2 rods apart and 2 feet 9 inches deep.



Corn After Alfalfa, a Practice That Brings Excellent Results

Our Garden and Truck Number

FOLLOWING the usual custom, our issue of March 1st will be largely devoted to the interests of gardening and truck raising, and we invite you to contribute experience on any phase of this subject that suits your fancy. Give the readers your plan of the home garden, tell how you grow truck crops that pay best, or write on anything in this line with which you are best acquainted or have had some interesting experience. We invite you most heartily to join us in making this issue interesting and practical to every one who grows a row of onions or ten acres of cabbage. We offer prizes as follows:

For best article published	\$15.00
For second best article	10.00
For third best article	8.00
For fourth best article	5.00

There is no limit on the number of words, but we want the article long enough to tell the whole story, and short enough to be interesting. Address all contributions for this issue, which should reach us not later than Feb. 5th, to the Editor of the Garden and Truck Number.

All articles that we can't find room for in this, that we print later, we will reimburse the writers for at the time of publication. Send your article in at once.

Encouraging Hired Men

By JOHN UNDERWOOD

THERE are likes and dislikes characteristic of all hired men to which we farmers must cater if we would have satisfactory help. My experience is that a good hired man wants to be with a going concern; that is, he wants to work on a farm that is progressive and up-to-date, and if he is managed rightly he will take as much interest in the progressiveness of the farm as the owner does. This is the kind of a hired man to have on the farm. During my farming career I have employed several different men and I know that it is not easy to find a man who will "fit in" as we farmers like, but when such a man is found it behooves us to employ every means that will encourage him to stay. In addition to the help of two grown sons I keep two hired men the year round, and during harvesting I have from 10 to 15 employed. Each of my regular hands has a first-class team over which he is given entire charge, and the pride that they take in their teams would do one's heart good to see. I do not consider that there is anything unusual about this. When good hired men are given a good thing to look after they will look after it well. I know that to be behind with the farm work is a thorn in the flesh of the average hired man. Some farmers may argue that it doesn't matter

to the hired man whether he is up with the work or not, that he is paid so much by the day or month, and that if there is any loss from being behind the farmer is the loser. But this is far from being the way to look at the matter. Our hired men discuss the progress of the season's work among themselves just as we farmers do. Probably you remember having heard a neighbor's hired man make a remark something like this: "We got the last of the wheat drilled in today," and have seen his face fall when one of your men remarked: "That's nothing; our wheat field is showing green all over." But if there is anything that will try the temper of the hired man it is being sent around from one small job to another and completing none of them. It is my experience that the men like to have the day's work mapped out for them. They admire a man who can lay out their work and knows to

within a few minutes just how long it should take to complete a job. Except in cases of emergency I never have my men to take up other work until they have finished the job they are on. This pleases the men and the result is that more work is done. Time is an essential element for which there is no substitute, and when the hands are going from one piece of work to another, leaving the first job unfinished, much time is lost. The hired man knows that he is paid to work and not shirk, and so long as we are fair in our demands he will do his best to live up to our schedule.

I know that the nearer we come to making the men feel that they are partners in our enterprise the better they will work. The farmer who goes around with a stately bearing and never opens his mouth except to give orders, is working against himself. That simply doesn't go, although I have seen a few men who say that "It's the only way to keep a man in his place." In nine cases out of ten such a man has difficulty in keeping efficient help. The proper attitude for the average man on the farm is a nice blending of friendliness and firmness. If I see one of my men getting slack in his work I never hesitate a minute in calling his attention to it, and I have never known one to seriously resent it. What hired men hate above all things is the man who does not

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The date on the address label shows the time to which your subscription is paid; Jan. 15 means that your subscription is paid to January, 1916. Renew at least one month before the expiration of your subscription to avoid missing any copies. It takes a month to change date on label, or to put a new name on our mailing list after we receive the subscription.

JANUARY 1, 1916

Happy New Year

THE PRACTICAL FARMER extends to all its readers, big and little, young and old, best wishes for a very happy and prosperous New Year. We hope that much joy and sunshine may find their way into your lives and that you may enjoy the best there is to be had.

Christmas over and New Year's Day here, the next thing that enters our mind is our work for 1916. These days when the blizzard drives the snow and sleet against the window panes, and the long winter evenings are capital good times to plan out the working campaign for the season. We like to get out our paper and pencil and map out our work in black and white. Once it has been decided just what crops will go in the various fields, the seed, fertilizer, labor, implement, etc., requirements can easily be computed. This is the time to work out every detail and plan, and the successful farmer is the one who, when spring work opens, has his plans all complete, his supplies on hand or arranged for, and his working force organized. This all calls for much study and careful preparation, but the farmer of today is equal to the occasion, and the records of the past year show conclusively how well he has succeeded.

The young folks of today will be the farmers of tomorrow, and our greatest responsibility is the shaping and moulding of their lives. It rests largely with us whether they stay on the farm or go to "town," whether they develop into progressive, practical farmers, or farmers of the hit-and-miss style.

We believe that if the home is made attractive and comfortable, farm buildings supplied with up-to-date equipment and farming viewed as a live, "going" business, no city attraction will be able to entice the young folks away from the homestead. Gov. Willis, of Ohio, tells the story of seeing a boy, barefooted, on the streets of Philadelphia on a New Year's Day begging for money. On questioning the boy and learning of the abject poverty of his family, the Governor suggested that the family move to the country, where steady employment could be had. To the Governor's utter amazement the boy refused this offer, and when asked a reason the little urchin replied: "The country is too slow." Of course, we can't understand anyone staying in the city in a half starved and frozen condition because the country wasn't "fast" enough for him, but what we can do is to learn a lesson from this street gamin. We are so engrossed in our work, and interested in its developments that we are very apt to neglect the young folks and for the time being forget that it is only natural that they want to in-

duge in fun and frolics and enjoy them as only youth can. A good rule works both ways, so let us consider the rising generation and so care for them that they in turn will "honor" their father and mother. By giving the best in us to our children, and promoting their happiness and education, we are unconsciously helping to make a better world and at the same time we are uplifting the already high standard of American agriculture.

It is not the intention of The Practical Farmer to ever "preach" to its readers, for we are inclined to doze off when any one starts preaching to us, but a few days ago we ran across a clipping and liked the sentiment expressed so well that we have pinned it up before us on our desk as a motto that we are going to put forth every effort to follow for 1916. If you think as much of these four lines as we do you will pin them up where you can read them often:

Good, better, best,
Never let it rest
Till your good is better
And your better, best.

The Backbone of The Practical Farmer

IT gives the Editor a great amount of pleasure to learn from the circulation department that during the year that has just closed many new readers have been added to The Practical Farmer family. We feel that we are in a large way responsible to our old friends, in whose homes The Practical Farmer is a welcome visitor, for many of our new readers. We take this occasion to thank them most heartily for the good will evidenced in recommending our paper, and we shall strive to keep our publication up to a high standard, so that the confidence shown in us shall not have been misplaced.

In welcoming our new friends we want to emphasize the fact that The Practical Farmer is published entirely in their interest, as its mission is to serve the men and women who take their living from the soil. We ask your confidence and invite your co-operation. Our columns are open to you, and if you will turn to our Live Stock section you will find we offer substantial cash prizes for articles on this subject published during the month, and these same prizes are also offered for articles on any agricultural subject.

The Experience Pool and Women's Exchange are edited entirely by our men and women readers, who also suggest the subjects to be discussed. We are sure you will agree that these two departments are of the greatest practical value once you become acquainted with them. Join us and write for either one of these and be sure to suggest anything you would like to see discussed, too.

In deciding what goes into The Practical Farmer our editors have two words before them—authentic and practical. Nothing is printed in these columns unless, in the judgment of our editors, the article be absolutely authoritative and feasible. No use of printing an article, however well it may be written, unless it is practical, and a doubtful article is eliminated at the very beginning.

It is with a justifiable pride that we point to the corps of able men we have on our editorial staff. These authentic and practical writers are at your service and we ask you to come to us with any of your perplexing questions and we will refer them to the editor whose particular line of work your question covers.

"The Father of Agricultural Writers," with whom we imagine you are acquainted, is Mr. T. B. Terry. Mr. Terry has been an associate editor of The Practical Farmer for nearly one-third of a century, and "Terry's Talks," full of help and rich in experience, (printed in every issue) are looked forward to and read by interested thousands. His pen exudes common sense and he is well fitted to give advice for he himself has made a success of farming. Starting on a worn-out, run-down, swampy farm, he has succeeded in making it a garden spot and an income producer. How he overcame a countless number of these obstacles is the subject for some of his interesting "Talks."

The Garden department is in charge of Prof. W. F. Massey, who gives timely suggestions and contributes some practical article in every issue. Very few men in the agricultural world today answer more questions than Prof. Massey, and many of these questions and answers constitute interesting reading in the Garden

department. Prof. Massey's judgment is accepted as final in the garden world and our readers are exceptionally fortunate in having this eminent authority to call on.

C. A. McCue, of the State Experiment Station at Newark, Delaware, is largely responsible for the marvelous growth of interest in our Horticultural department, and to his columns the fruit growing farmer first turns when his copy of The Practical Farmer arrives. The Horticultural department is full of important suggestions and explicit directions as to just what to do each month. No one in the country is better fitted to direct you in sprays and spraying than our Horticultural editor, as much of his daily work is right along this line. With our issue of January 15th Mr. McCue begins a series of articles on spraying. Every phase of this important work will be gone into thoroughly and you will be told just how to combat the insect enemies and fungous diseases. Everything Mr. McCue writes is well worth your careful study.

"Ask Turner" is a common phrase in this section of the country to any one seeking information on anything pertaining to poultry. The reason is simple, for our associate editor in charge of the Poultry department, Mr. F. V. L. Turner, is master of this industry and is capable of telling you how to make the pullets lay winter eggs, or how to cure a bad case of roup. Mr. Turner treats the poultry question from a utility, not fancy, standpoint, in which every farmer is interested. With this issue he concludes a series of articles on the value of the incubator, and as spring draws near brooders and the rearing and raising of chicks will be dealt with. If you want to know how to make farm chickens a paying proposition read everything Mr. Turner has to say and follow his suggestions. In addition to his "Practical Poultry Talks" he is going to tell you something about ducks, geese, turkeys and maybe guinea hens. If there is anything you want to know about poultry "ask Turner." A letter addressed in our care will reach him.

We feel very fortunate in having a practical scientist, Prof. A. E. Grantham, as editor of our Soils and Field Crops department. Prof. Grantham's experience and success entitle him to a place in the front rank of writers and demonstrators in all soil and crop questions. As an example, Prof. Grantham has written for us some very helpful articles on the use of lime, and at the present time we are running a series of his articles telling just how alfalfa may be made to grow. Questions in this same line are constantly being discussed by him, and when the Professor says anything, we advise you to listen.

Those of our readers who are stock lovers have probably cut out and pasted in a scrap book for future reference, the articles that have appeared the past few issues on "Diseases of the Ox," by Dr. J. Hugo Reed. We are glad to say Dr. Reed will continue these practical articles and will treat of other farm animals also. An animal is of little use unless well and in a thriving condition. If you follow Dr. Reed's suggestions carefully we believe it will be the means of saving you much trouble with your live stock. Write the Doctor in our care if you want any veterinary advice. The inquiries we have received in the comparatively short time since Dr. Reed joined our staff leads us to believe that the Doctor will soon have his hands full giving advice to those who ask.

In addition to our regular associate editors as mentioned above, we have as contributors such eminent men as Henry H. Dean, Samuel Fraser, W. H. Tomhave, W. H. Bishop, F. A. Welton, A. E. Waller and scores of others who are also well versed in their particular lines.

Our feeling is that this introduction to some of the men who make up The Practical Farmer staff will make us all feel better acquainted. We need you and we hope you will find you need us, as we all are working together for a better understanding of intensive farming.

The United States Department of Agriculture at Washington has recently issued two publications of unusual interest to the farmer. These are Bulletin No. 302, on "Apple Market Investigations," and reprint No. 637 from the Year Book of the Department of Agriculture on "Co-operative Marketing and Financing of Marketing Associations."

Farmers interested in literature on goats are referred to the Angora Journal, Portland, Ore., and to Farmers' Bulletin 573 from the U. S. Dept. of Agri., Washington, D. C., which is mailed free upon request.

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HORTICULTURAL

Edited by C. A. McCUE

Dormant Spraying

For nearly fifteen years the orchardists of America have been combatting the San Jose scale. When the scale first made its appearance it multiplied rapidly, and from 1905 up until about 1910 or 1911 the control of San Jose scale was the most important topic for discussion whenever two fruit growers got together. San Jose scale and its control occupied a great deal of space on the programs of all horticultural societies, and the situation appeared desperate to many men. Many remedies were tried, some were good, some bad and some indifferent; the quick remedy of a harvest, and any one with a so-called scale remedy could get a hearing. The orchardists tried whale oil soap, kerosene emulsion, miscible oils, kerosene lime, lime-sulphur and many patented remedies. Out of all this chaos of remedies two have been sifted out as satisfactory in most particulars—miscible oil and lime-sulphur.

During the past five years we seldom heard the words San Jose scale mentioned at horticultural meetings. The remedy has been found and the up-to-date orchardist sprays as a matter of course. Many natural enemies of the scale have multiplied and assist in holding the insect under control. Just at the present time these natural enemies seem to be at the height of their efficiency, and many unsprayed orchards are free from scale. Yet the fruit grower should not consider the battle won and put away his spray pump. History is sure, sooner or later, to repeat itself. Nature always strives to maintain an equilibrium. As the scale decreases, so must its natural enemies decrease, and at some time, not far in the future, the scale will again gain the upper hand and become a live question in orchard management. This is particularly true in the orchards of those men who think the battle won and that there is no further need of spraying.

After the smoke of the spray battle had cleared away the fruit grower had begun to realize that the advent of the scale was one of the greatest blessings that the orchard interests of the country were ever endowed with.

Because of the scale we are better fruit growers; we know more about our business, and any new trouble that comes along does not have us backed up in the corner with our hands up. San Jose scale taught us how to fight, and it has given us many new weapons of fighting. If it had not been for San Jose scale we would not know the value of lime-sulphur in fighting peach leaf curl, oyster shell scale, scurfy scale, pear psylla, apple scab and a host of other troubles. If it had not been for San Jose scale we would still be spraying our apple trees with Bordeaux mixture and the control of the brown rot of the peach with self-boiled lime-sulphur would have been delayed a decade. San Jose scale stimulated both orchardist and scientist. It may truly be said that we progress only through adversity.

While "the scale" is no longer the great limiting factor in fruit production, yet we can well afford to spend some time in controlling it, and the methods of preparing the remedy for it.

Owing to the causticity of all sprays that will control the scale it is necessary to apply them when the trees are in the dormant condition. Dormant sprays are usually either lime-sulphur or miscible oil. Lime-sulphur appears

to be the most popular winter spray at the present time; it has the advantage over miscible oil in that it is a strong fungicide and helps greatly in controlling certain fungous diseases at the same time that it is killing the scale. Miscible oils are usually placed upon the market as "soluble oils." These oils are petroleum products so compounded with certain fatty oils or substances that the resulting product will mix, or emulsify, perfectly with water. These miscible oils are easy to apply and have great spreading qualities that are absent in lime-sulphur. This spreading quality is of particular advantage when applied to rough barked trees badly infested with scale. In regions where strong winds, blowing constantly from one direction, are the rule, the oil will work its way around to the leeward of the limbs and small branches much better than lime-sulphur.

In dormant spraying the miscible oils are usually used at the rate of about one part miscible oil to nine to ten parts water. Miscible oils should not be used in spray tanks that have contained Bordeaux mixture, without first being well cleaned. This precaution may save the trees serious injury due to the action of the copper upon the soap in the oil, thus setting free a pure oil that will not emulsify with water. While these oils can be made at home it is a rather difficult operation and they had best be purchased from the manufacturer.

Lime-sulphur is the most popular dormant spray not only for scale, but for other troubles, as mentioned above. Peach trees should always be sprayed with lime-sulphur in the spring just as the buds are well swollen; they may even show pink. At this stage of the bud development the spray is not only just as efficient for the scale but it also controls the leaf curl. For this reason it is recommended that the dormant lime-sulphur spray for peaches be delayed as late in the spring as possible.

Concluded in our next issue

Grafting Troubles

F. SCOTT.

The work of grafting seems to be the little job in comparison to saving the new sprouts against the wind. Last year all my new growths were blown off when they were about a foot long. This is somewhat discouraging, and so I have gone about to devise a plan which I know will protect the new growth, and am giving it to The Practical Farmer readers in time so we may all be benefited thereby. By tying a stick to the limbs so as to protrude a foot or more above where the grafts are put in will give something to tie the sprouts to so as to protect them. A wool twine tied at the lower end will not hurt the growth of the limb. Then the growths, by the time they are 6 inches long, can be tied to the sticks and followed up as the new growths lengthen.

Ohio.

General orchard pruning will come later, but remove the dead, diseased, or broken limbs at once. Ragged wounds left where branches have been broken down by fruit, or by ladders used in picking, leave openings for cankers and other diseases. They should be pruned back to the living wood so as to leave a smooth wound which may be painted to keep out diseases.

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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

The Preparation of the Land for Alfalfa

The secret of successful alfalfa culture depends largely upon the preparation of the soil. It is not only necessary to get the soil in good condition, but it must be so handled that weeds will not interfere with the young alfalfa plants as they start growth. In the Northern and Western States it is a common practice to sow alfalfa along with oats or barley, the latter serving as a nurse crop. In this manner of sowing, the weeds are kept in check. The alfalfa suffers more or less from the competition of the grain crop and if the weather

the soil in ideal condition for seeding alfalfa. When the potatoes have been kept free from weeds very little extra preparation of the soil is required after the crop is renewed. A thorough disking, followed by a leveling harrow, will put the land in good shape for seeding. If the potatoes are weedy the land must be plowed again as soon as the crop is out of the ground. In the latitude of Wilmington, Delaware, the early potatoes may be harvested as early as the 10th of July. Among other crops which may be used to precede alfalfa is a mix-



er is very dry at the time the grain is cut the alfalfa may not become well established. Careful experiments in the Eastern States indicate that spring seeding cannot be depended on either with or without a nurse crop. Any method of soil preparation that will serve to eradicate the weeds and to free the soil of weed seeds will serve the purpose. It is well to note the fact that the first weeds which appear in the spring may be easily destroyed by cultivation, yet this does not free the soil from successive crops of weeds which must be eradicated by frequent cultivations. Hence, the better plan for cleansing the soil of weeds is to cultivate the soil until late in the summer. Alfalfa sown during August has a chance to compete successfully with any weeds which may be left after the frequent summer cultivations. There are two ways by which a clean seedbed may be prepared by the middle of August. The first is by plowing the land, preferably a sod or green manure crop, late in the spring, preparing the soil as for corn, and then keep the land fallowed during the summer. After every rain the harrow should be used to fine the soil and to destroy the small weeds as they appear. Care should be taken to do this work so thoroughly that the land will be kept entirely free from vegetation during several weeks in the summer. The land may then be sown to alfalfa about the middle of August with very little chance of the weeds becoming a menace to the young plants. The second method is more economical in so far as the use of the land is concerned. It consists of growing a hoed crop like early potatoes, or canning peas, during the spring and early summer and after these crops are removed preparing the land for seeding to alfalfa. Where clean culture is followed, early potatoes make an excellent preparatory crop for alfalfa. Potatoes are usually well fertilized and the continued culture the crop receives during the season puts

ture of Canada peas and oats for hay, which may be removed in ample time to prepare the soil for alfalfa. Then the weeds have been fairly well checked by the dense growth of the oats and peas. Where crimson clover has been harvested for hay or seed, there is an interval of nearly two months in which to prepare the seedbed for alfalfa. Wheat or oats stubble may be fitted for alfalfa, but often extra labor is required to put the soil in good condition because of the dry weather at this season. If the ground is to go into alfalfa it should be plowed as soon as the wheat is harvested. If for any reason the wheat cannot be removed promptly after cutting, a partial preventive against the land drying out may be secured by disking it as soon as the wheat or oats is cut. A double-action cutaway harrow may be driven immediately behind the binder as the wheat is cut. The grain may be set in shocks as usual on the disked land. This will prevent too rapid drying out of the soil and the land will break more easily and without clods.

Under any conditions the object in preparing land for alfalfa should be to get the soil well settled, free from weeds and well supplied with moisture at seeding time. Here is where summer fallowing or the growing of early potatoes gives the ideal preparation. A great many of the failures to secure a good stand of alfalfa have been due to careless or hasty preparation of the seedbed. Eleventh hour methods will no work. One should plan ahead several months in preparing the soil for alfalfa. If manure is to be used as a fertilizer it should go on the crop that precedes the alfalfa, so that the weed seeds it may carry may be destroyed before the alfalfa is sown. At the time of seeding the soil should be in a condition of fine tilth, fairly well compacted but with a loose mulch of fine earth on top. Moist earth should be found within an inch of the surface, even though the season is dry.



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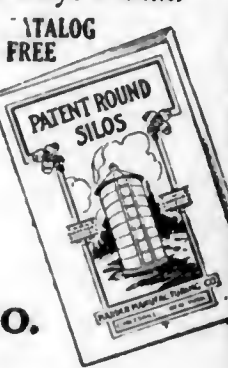
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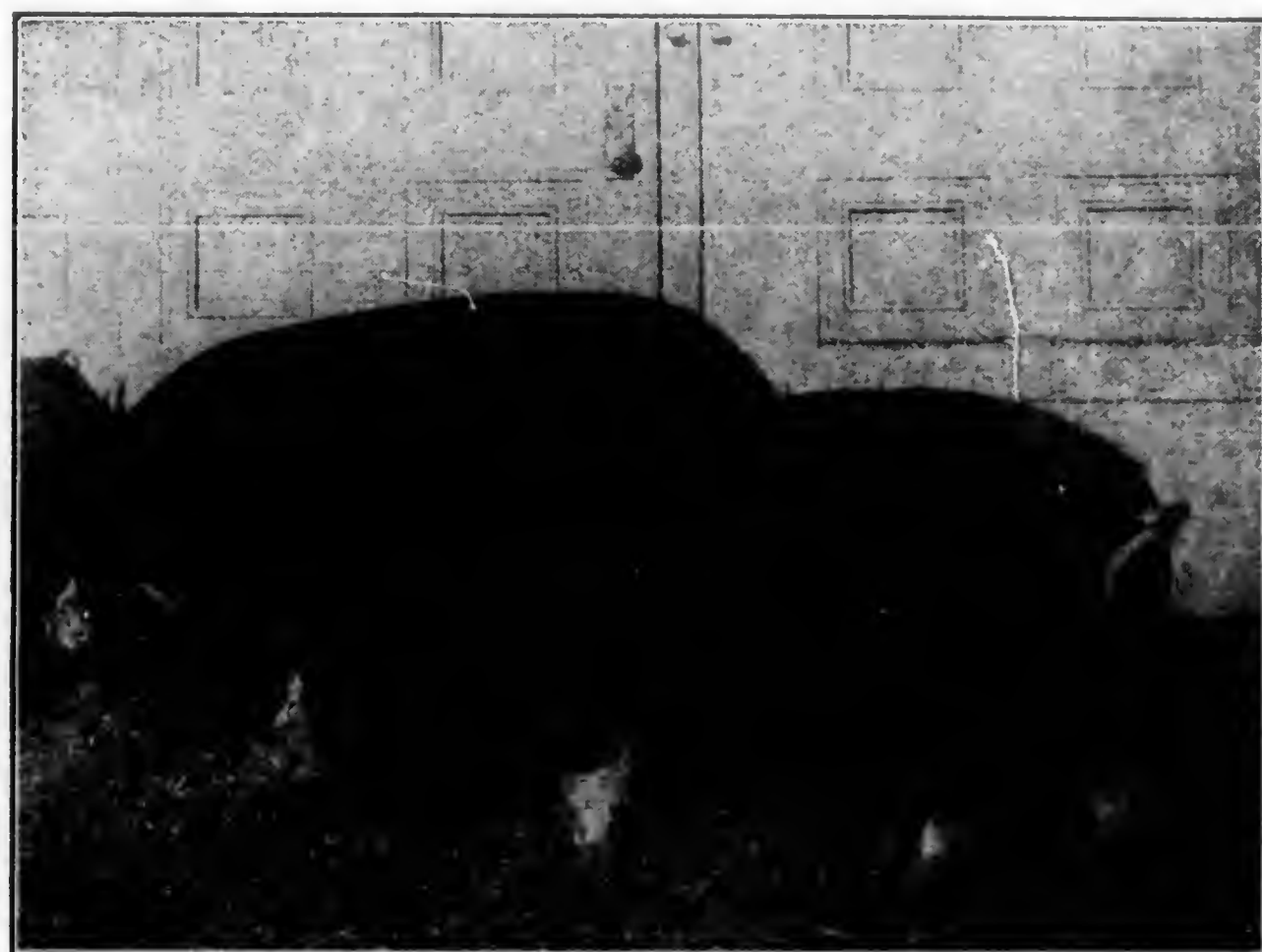
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any time, but they should be thrifty and vigorous at the time of breeding. During the gestation period the brood sows should be fed such feeds as will tend to develop a strong, vigorous litter. They should be fed so as to gain slightly during the gestation period. Where available, such feeds as clover hay and alfalfa hay can be used to advantage and will help to keep down the cost of maintenance. Where either of these two roughages are available they may be fed as chopped hay or in racks. The best results are obtained when a small amount of grain is fed in addition. This mixture should be made up of corn 15 parts and tankage 1 part, and fed in amounts ranging from one-half to one pound per 100 pounds live weight daily. After farrowing it may be necessary to slightly increase this amount of grain. If no alfalfa hay is available a grain mixture of corn 10 parts and tankage 1 part, or corn 5 parts and oil meal 1 part, or corn 8 parts, wheat middlings 2 parts and tankage 1 part may be fed. If skim milk is available it can take the place of tankage or oil meal in the ration. It is



The Type of Hogs That are in Demand on the Market

often advisable to introduce some bran into the ration during the gestation period, so as to add bulk to the ration. This should not exceed 20 per cent. of the ration.

The brood sow should have special attention at farrowing time. Several days before the sow is due to farrow the amount of feed supplied should be reduced to about half the normal amount. At farrowing time and for a period of 36 hours after farrowing, she should receive very little feed, but plenty of warm water with a small amount of meal in it. The reason for this method of feeding is that if the full ration is fed up to farrowing time the system of the animal will be in a feverish condition and the sow is frequently unruly. It also has a tendency to over-stimulate the flow of milk, the result of which frequently causes milk fever in good brood sows. At the end of two or three days gradually begin to increase the amount of feed and continue until the sow is again getting a normal amount. As soon as the brood sow has recovered from the effects of farrowing and the young pigs will consume all the milk supplied, there is little danger of over feeding. The brood sow should be given a liberal allowance of feed while nursing the pigs, so that her body weight will not be materially reduced. It is cheaper to keep the body at normal weight than to have her reduced in flesh and later provide the feed to again build up the body.

During the gestation period it is highly important that the brood sows have

plenty of exercise. Unless she is forced to take exercise she will have a tendency to remain in her quarters. It is an excellent plan to have the feeding trough some distance from the sleeping quarters. When this arrangement is made the brood sow is compelled to take exercise in going to and from the feeding trough. It is also well to scatter a small amount of corn over different parts of the lot, which will require the sow to take exercise.

Cooling of Cream Affects Butter Grade

The most important single factor in the production of high grade butter is the proper cooling of the cream, according to Oscar Erf, Professor of Dairying at Ohio State University. To make the best grade of butter, the cream should be separated from the milk with a clean separator, kept separate from the cold cream and cooled immediately. The cause of bad cream in winter, the quality of cream as controlled by its temperature and the cooling of cream are treated in a bulletin by Prof. Erf.

Queries Answered

Milk or Butter.—W. A. D., New York, writes: "Take milk at \$2 per 100 lbs., how much would you have to sell the cream for to break even? What do you consider is the value of skim milk for feeding on the farm? Is it better farming to sell whole milk or to sell butter and keep the skimmed milk on the farm?"

1. When milk is valued at \$2 per 100 lbs. (if it be average milk in fat content, or tests 3.5 per cent. fat) cream would have to sell for 57.1 cents per pound fat "to break even," assuming there was no loss of fat in the skim milk, and assuming further that the skim milk has little or no value. However, most farmers value skim milk at 25 to 30 cents per 100 lbs. Assuming that the separator is set to take 15 per cent. of the whole milk as cream, there would be 85 lbs. of skim milk from each 100 lbs. of whole milk. If skim milk be valued at 30 cents per 100 lbs. the 85 lbs. are worth 25.5 cents—for easy figuring we shall say 25 cents. After deducting the value of the skim milk from the \$2 per 100 lbs. of whole milk we have \$1.75 as the price we shall have to make up in the cream. This figure at 50 cents per pound fat as the price at which the cream must be sold to equal the stated price for milk. If skim milk be valued more or less the price for fat in cream would be varied accordingly. There is also the question of labor in separating the cream, cost of cooling and cost of delivery, these two latter items being much less for cream as compared with milk, owing to the less bulk of milk.

2. The value of skim milk varies a great deal, depending on facilities for feeding, whether or not it may be utilized as human food in the form of cottage cheese, or be made into butter milk for drinking purposes. Some claim a value of 50 to 75 cents per 100 lbs., but this is too high for feeding live stock under ordinary circumstances. As previously stated, 25 to 30 cents per 100 lbs. is a fair valuation for skim milk as a food for animals. Much depends upon circumstances as to whether it is better to sell whole milk, or to sell cream and butter only, or feed the skim milk on the farm. For the man who needs cash quickly and who must make all the profit possible in a given time regardless of labor or soil fertility, selling milk direct to the dealer or consumer is to be recommended if his farm is in "good heart," and especially if he purchases considerable feed or can get mature readily, he will be able to run this kind of dairy farming for a considerable time without bad results. On the other hand, if the land be poor and manure or rich feeds are not available, and if the owner can afford to wait for his returns, then we strongly advise selling cream, or butter only, from the farm. In fact, this may be considered ideal dairy farming, as the soil is not robbed and the growing live stock have the best food obtainable at reasonable cost in the form of skim milk. Cream can be shipped long distances and there is always a market for it at good prices. It may be delivered two or three times a week, which is an advantage on a busy dairy farm. If butter be made, it requires some one who knows how to make good butter, and also a good market. Cream and butter come largely from air and water, hence cost the farmer practically nothing for fertilizing material to feed the soil.

Worms in Cattle.—A. A. S., writes: "Kindly give cure for worms in cattle." We presume you mean weanlings. Starve for 12 to 14 hours. Then give a tablespoonful of oil of turpentine in one-half pint of raw linseed oil. Or mix one-half ounce of each of powdered sulphate of iron, sulphate of copper and

tartar emetic, make into 24 powders and give a powder every night and morning in dampened rolled oats or bran. After the last powder has been taken, starve for 12 hours and then give one-half ounce raw linseed oil.

Sunshine a Germicide

Sunshine is an amazingly potent germicide for the farm housekeeper and in the dairy and stables. The practice of exposing cooking and other utensils used in connection with food to direct sunlight makes use of this fact, although comparatively few appreciate exactly the work done by the sun in this regard. Probably only those who are acquainted with tests which have actually been made realize how quickly sunshine kills disease germs exposed to it. Hence the following tests may be generally instructive and interesting.

A pasty, creamy mass of tuberculous material, which was proved to contain uncountable numbers of virulent tubercle bacilli, was obtained from a tuberculous cow and spread in thin, smooth, translucent layers on sheets of glass, pieces of wood and strips of muslin. Some of the sheets of glass, pieces of wood and strips of muslin were then placed outdoors on a moderately warm, clear, calm day where the sun could shine on them, and an equal number were placed in a dark room. After 15 minutes exposure to the sun, the tuberculous material on the glass, wood and muslin still contained large numbers of living, virulent tubercle bacilli, which were proved to be fully capable of causing tuberculosis, but after 30 minutes exposure to the sun no living tubercle bacilli could be found; every test that could be made proved that they were all dead.

Similar tests with quite large opaque masses of tuberculous material, larger and denser than any tuberculous person is apt to expectorate, proved that the bacilli in such masses on glass are still alive after 4, but entirely dead in less than 8 hours, and still alive in the material on wood and muslin after 8, but dead in less than 16 hours.

The tuberculous material in thin layers on glass, wood and muslin, kept in a dark room, was proved to contain fully virulent, living tubercle bacilli after 30 days. The contrast is remarkable, tubercle bacilli of the same kind, on the same kind of material, dying in a smaller number of minutes in the sunshine than the number of days they remained alive in a dark room.

As most varieties of disease germs are more easily destroyed by germicides than tubercle bacilli, and as tubercle bacilli, in the thin layers in which they are likely to adhere to clothing, blankets, rugs, draperies, furniture, walls, floors, etc., are killed by the rays of the sun in less than half an hour, though they remain alive in dark places a month and longer, it is reasonable to draw the following conclusions:

(a) As a general sanitary principle it is desirable that all dwellings, stables, etc., should be so constructed that an abundance of sunshine can reach their interiors.

(b) As a general protective measure against disease germs, it is an excellent practice to expose utensils for handling milk, and milk cans after they have been cleaned, to direct sunlight, and to hang or spread wearing apparel, blankets, bedding, rugs, horse blankets, etc., periodically where the sun can shine on all parts of them.

Good silage is the best, cheapest, most palatable, most healthful, greatest milk and meat producing roughage known.

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POULTRY

Edited by F. V. L. TURNER

All letters, inquiries and requests in reference to poultry, should be addressed to the Poultry Editor of The Practical Farmer, Philadelphia, Pa.

Practical Poultry Talks

How an Incubator Should Be Run

Any man, woman or child that can light the evening lamp can operate an incubator. Ninety per cent. of the few failures in incubator operation are due to the advice given by some one who has probably failed to follow directions. Don't imagine for a minute that the manufacturer of an incubator does not know his machine and that he is, therefore, better qualified than any one else to instruct the purchaser. Full instructions are supplied with every incubator sold; follow the plainly printed directions or failure will be the result of your inattention in every case.

For twenty-one years the writer has been operating incubators and there are others that know more about incubators than the writer ever hopes to learn, but the fact remains that the manufacturer knows more than these others how best to operate the machine he puts on the market.

So much for just how an incubator should be handled.

If an amateur were to ask my advice about handling an incubator I would tell him to first see that he purchased the best of oil, and second, to know that the eggs set were the kind that would hatch well. Hatchable eggs increase the efficiency of the incubator, while poor eggs decrease it.

Door knobs will be just as acceptable to a broody hen as 100 per cent. fertile eggs, but the difference in results is amazing. Likewise, high hatchability is the open sesame to big hatches, whereas low fertility is generally set up as the incubator's failure. Blame the incubator's failure to turn out big hatches upon anything you like, and also credit it with the ability to do its best when it is supplied with highly hatchable eggs.

There is nothing odd, peculiar or difficult about an incubator. If the heat is kept at the temperatures prescribed by the maker, there can be no question about results, all other things being equal. Thermometers are not always as accurate as might be, but these can be checked up by any standard thermometer in the hands of your druggist, or elsewhere. As a general rule, thermometers for incubators are carefully adjusted and are quite accurate, so much depending on the proper temperature.

Another factor essential to successful artificial incubation is the freshness of the eggs placed in the incubator.

If eggs are ten days gathered, the last day's gathering will hatch first, the first day's gathering hatching last. Eggs kept from day to day should be completely turned over every day, and ten days should be the limit placed by the operator on holding for incubator work. A temperature not over 60 degrees is best in which to keep hatching eggs, and freezing or near freezing is dangerous to all egg life.

In ancient Egypt, just as in today's Egypt, the incubator attendant used no other thermometer than that given by nature, the sense of touch. Temperature was a matter of personal sense of touch peculiar to the operator, and better hatches are obtained in Egypt in this manner than our modern machinery is capable of. True, the experi-

enced incubator operator knows at a glance whether his machine is just right or not, and in hand turning the eggs the sense of touch is quickly acquired to a degree that is invaluable as later hatches are made. Incubator work is highly interesting, never tiring, because of its short duration, and its reward is genuinely convincing of the wonders of nature because real, actual life is brought into being through our intelligence and labor.

Get an incubator; it is a wonderful piece of simple mechanism, silent and efficient, without motion but always active, creating life in the same manner and in the same time as the mother hen, taking her place that she may furnish more latent chick lives, thereby increasing her capacity to add to the scheme of nature.

An incubator is necessary to the poultry scheme on any farm, large or small, and will quickly, the first season, return its purchase price, once, twice or more times as the enterprise of the operator indicates.

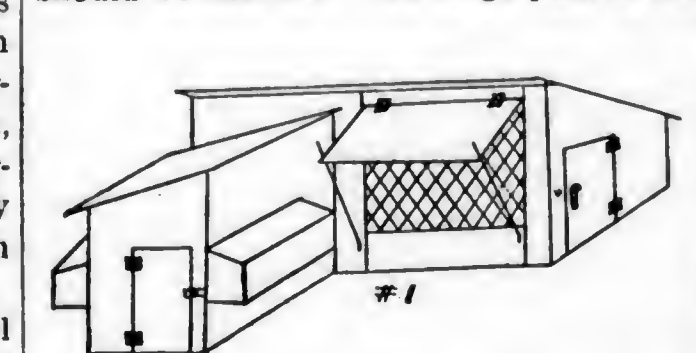
His Reasons for Success

W. B. GERMAN.

The three requisites for success in poultry are economy, comfort and convenience, and all three will be found in the coop here illustrated—economy in cost, comfort winter and summer for fowls, and convenience for attendant.

The main part of the house (Fig. 1) is 5x10 feet, the laying attachment is 4x6 feet, in which 20 layers can be comfortably accommodated. To increase the flock would necessarily mean an enlargement of the building, but personally I prefer small houses and fewer hens, for hens will be better satisfied and do better when thoroughly acquainted, and this is almost impossible with large flocks, as there is bound to be more or less quarrelling and fighting, which destroys the usefulness of the hen in proportion to the number of spats she engages in.

Fig. 1 gives the outside appearance of house, which I think should require very little changing, unless a larger one should be desired. The large part is the



main room; the small part is for scratching and laying. Nests are fastened on the outside and are trap nests. A running board is placed inside for hens to enter nests, which can be run full length or not, to suit the size of the flock. Nests should be made of continuous boards at top, side and bottom, and should be made waterproof, especially on top; mine is covered with waterproof paper. This part of coop is made of 2x4 stuff for top and bottom, with 1x2-inch strips up and down, and is covered with muslin, which admits air and light. Partition between this and main coop should be solid, with the exception of a runway for fowls, which should be closed on extremely cold nights. The roosting place is in the back end of the large coop and reaches from side to side. The droppings-board

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The Belgian Hare Industry is the great coming industry of this country. The Belgian Hare will help the poor man to reduce his food bill as he is the cheapest, easiest and most profitable food furnishing animal to raise. His meat is far superior to chicken in nutrition value.

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GREIDER'S FINE CATALOGUE of pure bred poultry: 70 breeds illustrated and described, many in color. Perfect poultry guide—all facts. Low prices on stock and hatching eggs. Localities and brooders. 25 years in business. You need this book. Send 10c for it today.

B. H. GREIDER, Box 44, Kansas, Pa.

World's Greatest Layers \$4.97 net profit per hen. One laid \$4.97. They are Barron Wyandottes, 1000s, Buff Rocks, Red Rocks, Morris Farm, R. 4, Bridgeport, Conn.

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POULTRY FOR PROFIT. An excellent guide to poultry information. Written by a man who has made a fortune in poultry. Contains all the latest facts on poultry raising. Low prices on fowls and eggs. Frank Foy Poultry Farm, Box 49, Clinton, Iowa.

TRAP NESTED BARRED ROCKS

Pullets from heavy laying strain at reasonable prices. Vigorous farm raised, free range stock.

G. A. Williams, Box 324, Warwick, N. Y.

Harrington's Silver Laced Wyandottes

High-class stock for sale, young and old. Few very select cockerels, \$4. \$5. \$10. from my great laying strain. Write your wants. Satisfaction guaranteed.

W. H. Harrington, Caledonia, Ohio.

Single Comb Black Minorcas

The best farm fowl. Large, hardy, heavy layers. Producers of the largest white eggs. Eggs \$1.50 per 15. \$10.00 per 100.

M. S. BENNETT, WESTFIELD, N. J.

Chicks

We ship thousands, orders should now be booked for spring delivery. Ancona \$1.00 hundred, also have other varieties, free booklet and testimonials.

Freeport Hatchery, Box 16, Freeport, Mich.

"GIANT" STRAIN BRONZE TURKEYS with great massive bone and frame. Bred from Great Hugo King 45 lb. at one year of age. Buff I. Rocks, national winners and all year layers. Write.

J. C. Clipp, Box 5, Saltillo, Ind.

DAY OLD CHICKS Rocks, Leghorns, Wyandottes, Campbells, 200 Egg Strains. \$1.50 per 100. \$15.00 per 1000.

H. H. Cummings, Warner, N. H.

S. C. Rhode Island Reds Splendid, rich, red birds for sale. Yearling cock, cockerels and pens. Prices reasonable.

CARNEY'S FARM, TREBLE, OHIO.

MAMMOTH BRONZE TURKEYS bred from prize-winning stock. A. H. Yearling. White Runner Ducks, big type, prolific Poland Chicks, Eggs, SUNSHINE FARM, JONSVILLE, VA.

FOR SALE Pairs, trios, pens; all varieties. Rocks, Red Wyandottes, Leghorns, Orpingtons, Anconas, Campbells, Hamburgs, turkeys, ducks, and geese. Prices low. RALPH H. RABY, R. 6, Millersburg, O.

ROSE COMB REDS Every bird shown at Allentown and Hagerstown shows. Pullets and cockerels for sale. Prices reasonable.

Twins Oaks Farm, Box 3, Palmyra, Pa.

Choice Rose Comb Rhode Island Red Cockerels Also a few pullets, reasonable. Write me.

F. A. Morning, Clifton Springs, New York

BARRON early hatched Leghorn and Wyandotte cockerels, dams, records 300 to 250, \$2.00 up. Also pullets. Summer sale of breeders.

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50,000 chicks for 1916. Rocks, Wyandottes, Leghorns and Crossed Chicks 7c and up. Safe delivery guaranteed. Free. Keystone Hatchery, Box 35, Hatfield, Pa.

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MAMMOTH BRONZE TURKEYS large, healthy stock. Black Langhans, Buff I. Rocks and Light Brahma cockerels. N. H. MYERS, Eden, Va.

S. C. Brown Leghorns High class cockerels and pullets. Score card furnished. Booklet free.

H. M. MOYER, R. 3, Hoytstown, Pa.

Silver Hamburgs High class cockerels and pullets. Score card furnished. Booklet free. L. H. MOON, R. 5, Orleans, Ind.

White Holland Turkeys White African Guinea. Eggs in season. Habitu. Silver Maple Farm, South New Berlin, N. Y.

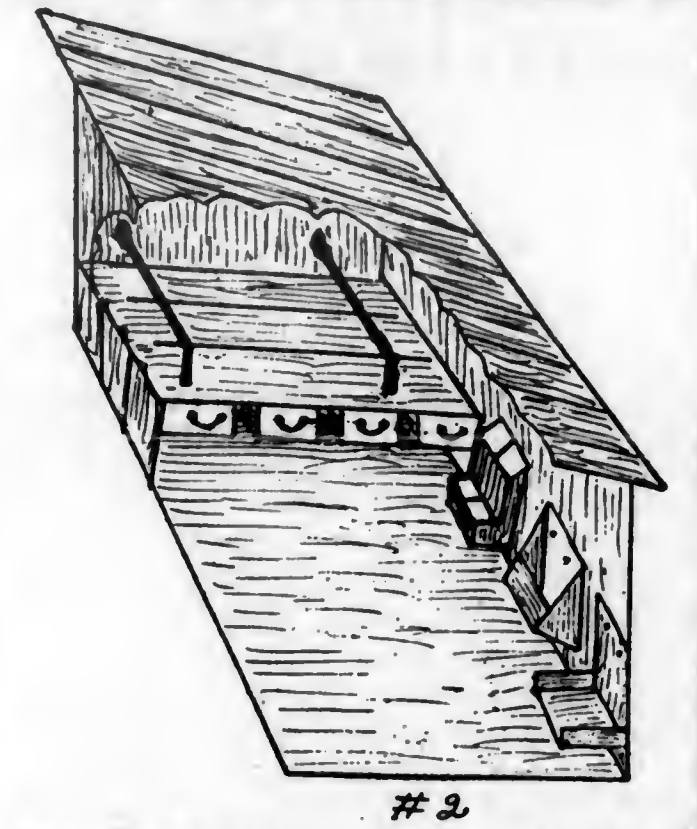
60 VARIETIES Chickens, ducks, geese, turkeys, guineas and hares. Stock and eggs. Valuable catalog free. H. A. Souder, Box 30, Sellersville, Pa.

INDIAN RUNNER DRAKES from extra heavy laying strain. Fawn and White. \$1.50 each. Send stamped envelope. Mrs. L. E. ELLIEN, Lester, Pa.

is made of matched lumber and is up off the floor, and should be put in on cleats so it can be removed if necessary. The wise poultryman will have everything off the floor, so as to give the entire room for the hens to work in.

The space not occupied with laying shed is covered with wire netting and extension over this should be large enough to cover all the wire when let down, which is seldom necessary. This extension or awning is covered with muslin and can be raised or lowered to suit the occasion. Don't fail to put this awning on, for it is one of the main features of the house. To assist in size of outside yard my house was built up off the ground; this is at the option of the builder, but when down should be enclosed at least on three sides for warmth in winter.

Fig. 2 shows inside of house. You will notice everything is up off the floor. In the illustration the place for



water is in the corner, but should be just inside the door, then water can be given without going inside of coop. This apartment need not be entered except to place receptacles filled with grit, oyster shell, bran, etc., and to keep the house clean. Receptacles should not be nailed fast, but hung on nails so they can be taken out for cleaning. Roosting perch is hinged at back and can be raised when cleaning droppings-board. Nests under droppings-board can be omitted, as I did not use them after putting in trap nests. You will notice there is no glass in this house, but to be sure that I had no frosted combs, during the winter I placed a sash with glass over the left part of netting, covering somewhat more than half of this space. This was fastened to the inside at top and bottom with screws, and is taken out in the spring when the weather gets warmer. I have had splendid success with this house, my hens laying all winter when others around me were getting no eggs, and I can fully recommend it.

Pennsylvania.

The Farmer's Library

J. ARTHUR REID.

If there is one thing a farmer needs just as much as a farm office, it is a farm library. By a farm library I do not mean a room in the house filled with musty books containing pro and con academic discussions, but a library of practical farm books and literature. A bundle of the latest farm papers are worth more to any farmer than a roomful of books on astronomy or theology.

Now that winter and the accompanying slackness of farm work are here, no better investment could be made than five, ten or fifteen dollars for a few of the latest farm books and in subscriptions to a half dozen agricultural publications. The farmer and the entire family will have time to read them, and the reading will prove profitable.

Those farmers who have an office, and they are not a few, should have a farm library in connection. No expensive bookcases or files are needed. A small book rack or case will cost only a few dollars, and a file for the farm papers can be made. All of the latest state experiment station reports, and reports issued by the U. S. Agricultural Department, should be procured and read and then filed for future reference. They contain the meat of all that the government's experts are able to discover in everything that pertains to farming.

No farmer, no matter how much he knows about farming, knows so much that he cannot learn more. Other farmers are always finding new ways and means, and only through regularly reading the farm papers can we also profit by them. A farmer without a farm library lacks one of the most important implements of his trade.

Pennsylvania.

Roup is now stalking through the land; that the harvest of death he will reap will be appalling goes without saying. Cracks, crevices and knot holes are his entrances—stop them up and rout out dampness; prevent his entrance and save the layers.

Worth While Suggestions

A straight line is the shortest distance between two points—the shortest distance between an egg and a chick is by way of an incubator.

A good layer is very much like a good milch cow—worth money.

It pays to buy the good.

"Build not your house upon the sand."

New grain is well worth looking over carefully for mold—mold is fatal to poultry. Moldy bread is one of the most dangerous foods we hand the unsuspecting hen.

Disease germs live forever, if allowed life—kill them now that they may not harm later. Whitewash, disinfect, spray with germicides, use lime in the drinking water and keep your eyes open.

Begin now your spring poultry work that the summer will not overtake you before its completion.

Beware of the constancy of a sitting hen would be a fine running mate to "Put not your faith in princes."

Green food as a part of the ration will increase fertility, and it should be introduced about a month before hatching time.

The total cost of the minor items of equipment needed on a farm is much greater than the average person is wont to think. It has been found by inventories taken on a number of farms that the tools and implements actually needed on the average farm, from a wheelbarrow down to a husking peg, cost nearly \$200.

Wonderful Egg Producer

Any poultry raiser can easily double his profits by doubling the egg production of his hens. A scientific tonic has been discovered that revitalizes the flock and makes hens work all the time. The tonic is called "More Eggs." Give your hens a few cents' worth of "More Eggs" and you will be amazed and delighted with results. A dollar's worth of "More Eggs" will double this year's production of eggs, so if you wish to try this great profit-maker, write E. T. Reefer, poultry expert, 7361 Reefer Bldg., Kansas City, Mo., who will send you a season's supply of "More Eggs" Tonic for \$1.00 (prepaid). So confident is Mr. Reefer of the results, that a million-dollar bank guarantee that if you are not absolutely satisfied, your dollar will be returned on request and the "More Eggs" costs you nothing. Send a dollar today or ask Mr. Reefer for his Free poultry book, that tells the experience of a man who has made a fortune out of poultry.—Adv.

106 Chicks Out of 108 Eggs

HATCHED IN AN OLD TRUSTY ELEVEN YEARS OLD

This was for Mr. S. W. Warren of Tryon, Neb., and it was in an Old Trusty that had failed of the porch and let lay around the yard and given abuse that would have put an ordinary incubator out of business in no time. Old Trusty is built to make good, not only for a few years but for many years, and make big hatches any time and anywhere. 600,000 selected owners.

Write for This FREE 136-Page Book and get our 1916 price, freight paid to your station. 40 to 50 days' trial. H. H. JOHNSON, M. M. JOHNSON CO., Clay Center, Neb.

Less \$10 Than any other incubator east of Rockies—a trifle more farther west.

Watch!

Guard against losses of baby chicks for the first 10 days. If they come through this critical period without bowel or digestive trouble you can usually count on them for market.

F. P. C. Chick Manna

Standard Since 1884

A perfectly balanced natural food that keeps baby chicks, turkeys and pheasants healthy and hearty and prepares them to grow and thrive on ordinary food. Not an experiment, but a standard food in use by successful poultrymen since 1884.

Ask your dealer for Chick Manna, or write direct for offer of trial package by parcel post. Booklet on prevention of poultry losses sent FREE. Satisfaction or money back.

F. P. Cassel & Son, No. 2 Main St., Lansdale, Pa.

Start a Custom Hatchery

The hatching season is approaching. This is the time for you to earn a substantial amount without interfering with your regular work.

The Candee comes all-built, is set up easily and will begin at once to earn money. People pay \$2 per tray of 15 eggs to hatch for them. Any surplus eggs you have can be turned into day-old chicks that will readily sell for 15c each. In every locality business awaits some man, woman, boy or girl who is ready to start.

Write for Catalog Today What others have done you can do. If you have any desire to make poultry profitable or to open up a poultry department in connection with dairy, fruit, pigs or other work.

Ask Also for Catalog Brooder Catalog

Candee Incubator & Brooder Co., Dept. F, Eastwood, N.Y.

Licensed by W. A. Schleit Mfg. Co., Inc.

Magic Brooder—Price \$15.00

Built of solid cast iron with latest improved grate, large ash pan, coal magazine, automatic heat control top and bottom. Positive in operation.

Agents Wanted. Write at once for territory and terms. You can make money selling the Magic Brooder at \$15.00. It is a perfect brooder.

Address UNITED BROODER CO., 42 Bellevue Ave., Trenton, N. J.

Get FREE Chicken Book

Our big, illustrated, free Year-Book—"Profits in Poultry Keeping"—will help you make more money with fowls. Tell us how you can get more eggs and make larger profits with less work. Learn about Cyphers-Built Incubators.

Sold at Low Prices Quality unequalled. Big hatches and a guarantee that protect you, backed by 30 years of leadership. We want you to have a copy of this great Guide for Poultrymen. Write for it today—free. CYPHERS INCUBATOR CO., Box 40, Buffalo, N.Y.

Little's White Wyandottes were victorious at Wilmington, Delaware, Lancaster and West Chester, Pa. Fine cockerels for \$2.00 to \$3.00 each. Pullets \$1.50 to \$2.00 each. Eggs from my best matings for \$2.00 per 15. Eggs \$1.00 per 50. Send your order from this ad. Samuel Little, Newark, Del.

For Sale

Pure Bred Bourbon Red Turkeys from Prize Winning Stock. As good as can be found anywhere, eggs in season for hatching. Write for particulars. Mrs. Otto Roney, R. 5, Gallatin, Tenn.

OUR EXPERIENCE POOL

"Experience is the best teacher." This Experience Pool is a twice-a-month Farmers' Institute for the exchange of practical ideas by practical farmers. We want them to give their experience, as well as suggest topics for future discussion. We publish this department so that all may have the benefit of the practical experience of others on every subject pertaining to the farm. Let all contribute. A cash prize of \$2.00 will be paid for the best contribution, \$1.00 for the second and 50 cents for each other contribution published. The only condition is that you are a yearly subscriber to the paper. Write on one side of paper only. On upper left hand corner mark plainly the number of the topic you wish to write about. Articles on all topics must be in our hands 15 days before date of publication. Do not forget to suggest a good topic for discussion. Address all communications to "Experience Pool," The Practical Farmer, Phila., Pa.

Topic No. 1187, JAN. 15.—Describe in Detail How You Cultivate and Fertilize Your Orchard. Give Your Experience in Spraying and Tell How You Market Your Fruit.

Topic No. 1188, FEB. 1.—Will You Use Wide or Narrow Tires on Your Wagons This Year, and Why? Give An Interesting Experience You May Have Had with Either.

Topic No. 1189, FEB. 15.—Give Your Experience in Hatching Eggs with Incubators. Tell Why You Prefer Them to Hens.

Topic No. 1186.—How are the Farmers' Institutes in Your Section Conducted? Give Any Suggestions for Their Betterment.

W. J., Ohio.—If the farmers' institute lecturer would sledge hammer his facts home with a blackboard and stereopticon, a talk would be a mighty lot more practical. It would stick longer in the minds of his hearers. I remember a particularly interesting talker was speaking on his favorite subject, "Horses." The horses in the locality were a grand mix-up of every breed and not typical of any. Farmers who should have been interested were nodding heads about a hot room. The lecturer was describing a typical draft horse. If a picture could have been shown on a screen the value of the talk would have been preserved. I am surprised at the number of farmers who have so little use of such words as coupling, pasterns, fetlock, or the features of a dairy cow to associate the points of a lecture with an animal when they get home. I heard a prominent lecturer give an excellent talk on home building. He covered such subjects as arrangement of buildings, and home sanitation, but the effect of the talk could have been multiplied by 25 had he a blackboard to illustrate his talk.

An institute speaker gave an extended talk on testing the dairy cow. Several samples of milk had been brought to be tested. The samples were measured, the test was completed and the results announced. The operation was apparently as mysterious as the tricks of a slight of hand performer. I have listened to talks on the use of lime, but I was up in the air about different kinds of lime until a limestone man showed me rock, the burned rock, the ground rock and slaked lime, and gave me samples of each, as well as some of the burned lime, to take home and allow it to go through the slaking process. Then much of the literature and talk regarding lime became very plain.

I have learned much more in a minute looking at some graphic chart showing comparative yields. A bundle of alfalfa from plats treated differently shows up soil treatment in a way that will not be forgotten. I have become lost following a speaker through a mass of tabulated figures. I like good practical conclusions, rather than a mass of data printed in big figures on a sheet.

The kind of institute that would look better to me would be one in which at one session every one should take some part. While waiting for speakers a local man told his methods in the poultry business, and it was the most interesting talk on the program. I would give the boys a chance to put their hands on the milk tester, to measure out the sample and whirl the machine. I would invite the men close to see how it is done, and let them go ahead and test a number of samples. A picture will sometimes tell a story more vividly than an hour's talk. A stereopticon, with generator, may be had and many states have a number of slides which are loaned. I contend the institute speaker should spend the night in some farm home rather than hang around a \$3-a-day hotel. If the farm home is convenient and the weather is not too bad, the speaker can learn something about local conditions and could adapt his talk in such a way that it would be more helpful to farmers in the locality.

And let the ladies have a separate session where the rearing and care of children, household economics, and the woman's work in the home may be discussed.

M. L. R., Tionesta, Pa.—The farmers' institutes held in this county, as in other sections of the state, are conducted under the auspices of the Department of Agriculture and the management of a county board. They are specifically adapted to local farm conditions. Besides fundamental general farming instruction given, they tend to lead to the pursuit of feasible branches more extensively or thoroughly than heretofore. Educational and ladies' sessions are features that add materially to the success of the institutes. Likewise the interspersal of music throughout all the sessions. As the ultimate success of an institute, however, is a practical use of the instruction given, a full attendance of the farmers of the community is absolutely essential to the best interests of the people in general. From the viewpoint of actual results accomplished on farms, in improved methods used and increased crop returns, it would appear that in many localities the instructions given have never been heard by all, or else are not generally heeded. To secure the best possible attendance at the institutes, and thus augment the agricultural interests of the community, is sometimes a difficult problem. In that regard the following paragraphs are suggestive:

1. Open the institute with a musical entertainment, vocal or instrumental, or both, and intersperse each session with music.
2. Arrange for the use of one or more local speakers.
3. Have a symposium of farm experiences in producing certain crops, placing names of speakers on the program.
4. Have a display of local farm products, each farmer trying to excel all others.
5. Provide a question box for the use of those who wish to ask questions not pertaining to subjects treated.
6. Have some regard to heating and ventilating the building in which the institute is held.
7. Awaken interest in the institute by agitating the subject of attendance, both by conversation and by the local press.
8. So far as possible publish each year the work of the institute in the county newspapers, that it may be read by all and permanently preserved.

The silo should be smooth on the inside and perpendicular from top to bottom. Uneven walls prevent the silage from settling evenly, all air is not excluded and spoiled silage is certain.

Do your cows pay? The scales and Babcock test should be used to answer this question.

YOU SAVED ME \$30

Zeas Bros., R. 2, Monmouth, Ill., says: "The No. 2 spreader is satisfactory in every way, works well in all kinds of weather and has given me trouble. It is better than any spreader I ever saw, think it stronger and not as liable to break as the others. It is used in spreading on well sown corn, wheat, clover, etc. in appearance and well painted."

TIMOTHY \$300 PER BU.
SAVE MONEY—Buy Direct from Grower.
New cleaned Iowa Grown Timothy, free from noxious weeds. Guaranteed Satisfactory or money refunded. Write today, 100-page catalog and Free Samples. Low prices on all grass seeds. Write before advance.
A. A. BERRY SEED CO., BOX 220, CLARINDA, IOWA

Money-Making Farms
Throughout the Eastern States; several with live stock; tools and crops included; to settle estate; illustrated catalog "Latest Farm Bargains" free. E. A. Strout Farm Agency, Dept. 1890, Land Title Bldg., Philadelphia, Pa.

January 17-18, 1916
Syracuse Sale Pavilion
Syracuse, N. Y.

January 19-20, 1916
Holstein Sale Pavilion
Earlville, N. Y.

These Are the Sales You Have Been Waiting for

What about the demand for Holsteins? We just read where at public auction a grade was sold for \$505. Some price, and her progeny will be nothing more than grades. Why putter with this kind? No matter how valuable this cow, her son would be valueless at the head of the breeder's herd. Further, you can get some high class pure-bred Holsteins at the BIG FOUR sales for less money than that. Here are just a few—

ENTIRE DISPERSION OF THREE SPLENDID HERDS

as well as choice selections from several others which are among the best things that have ever been offered for sale.

Neah Pauline De Kol Korndyke a four-year-old with a record of 20.47 lbs., averaging 4 per cent. fat, she a full sister to a 34-lb. cow and a three-fourths sister to a 36-lb. cow.

A daughter of Pledge Spofford Calamity Paul and the 34-lb. cow, Neah Pauline De Kol 2d Korndyke.

Two sons of King Concordia Pontiac, he from the 31-lb. cow, Nellie Concordia De Kol, and sired by King Pontiac Konigen, a 27-lb. son of King of the Pontiacs. One of these bulls is from the 32-lb. four-year-old, Lieuwijk Korndyke, the other from a 25.7-lb. senior three-year-old full sister to a 36-lb. cow.

A 28.6-lb. daughter of Korndyke Hengerveld Butter Boy, he by Korndyke Queen De Kol Butter Boy from a 25-lb. daughter of De Kol 2d's Butter Boy 3d.

A daughter of the above sired by Sir Woodcrest Korndyke Kate De Kol.

Edlie Netherland, a 27.1-lb. cow, testing 4 per cent. fat.

Daughter of the above by a grandson of Pietje 2d's Woodcrest Lad, Neah Pauline De Kol (25.8 lbs.) and Aaggie Cornucopia's Paul De Kol.

Daughter of King Korndyke Pontiac Lass (a full brother to the \$15000 bull). Dam's record 23.5 lbs. butter, 573.8 lbs. milk, she by a brother to the former milk champion, De Kol Creamelle. Dam's dam's record 21.29 lbs. butter, 548.7 lbs. milk and next dam 23.42 lbs. butter, 640.2 lbs. milk.

A R. O. daughter of Sir Sadie Cornucopia from an A. R. O. granddaughter of J. I. H. Pauline De Kol's Count.

Two daughters of Woodcrest Princess Lad, who is by Homestead Girl De Kol Sarcastic Lad, from the 26.6-lb. cow, Woodcrest Princess. Both are from A. R. O. dams of good breeding.

Two daughters of King Segis Pontiac Ideal, who is by King Segis Pontiac from one of the good daughters of King of the Pontiacs and therefore a three-fourths brother to the \$50000 bull. Both of these are from 20-lb. dams of splendid breeding.

A 20-lb. daughter of Tidy Abbecker King.

Five daughters and a son of Sir Copia Colantha Lad, he by Colantha Johanna Lad from a 25-lb. daughter of Inka Princess' Canada Prince and the 22-lb. cow, Copia Hengerveld 2d. The son is from a 29.2-lb. daughter of Belle Korndyke Beryl Wayne. Three of the daughters have nice records, viz., 19.6 lbs. at 2½ years 14.9 lbs. at 22 months and 19.8 lbs. at three years. Four are from good record dams. They are from daughters of Belle Korndyke Beryl Wayne, Aaggie Grace Sir De Kol, Manor Johanna De Kol or Prince Segis Korndyke.

Three daughters of Woodcrest Ina Pietertje, two from 21-lb. dam.

Minnie De Kol 6th, 26.6 lbs. butter, testing 4.25 per cent. fat, sired by the show bull, Aaggie Cornucopia Johanna Lad 7th, from a 25-lb. daughter of Paul Beets De Kol.

A 27-lb. three-year-old daughter of Woodcrest Albina Pietje.

A 24.6-lb. granddaughter of Johanna Rue 3d's Lad and her daughter by Pietertje Hengerveld Segis 10th.

Spring Farm King Pontiac 13th, who is by Spring Farm King Pontiac from a 24.5-lb. daughter of Pontiac Hengerveld Parthena.

Nine daughters of above bull, all from good dams.

Three daughters of the \$15000 bull, Spring Farm Pontiac Cornucopia, from dams with records of 21.4, 15.09 and 24 lbs.

Three daughters and one son of Beauty Pietertje Hamilton, he by Beauty Pietertje Butter King from the noted three times 30-lb. cow, Betsy Hamilton Beauty.

Two by a 26-lb. son of Beauty Pietertje Hamilton.

Two by extra good sons of King of the Black and Whites.

The 26-lb. cow, Daisy Clothilde Burke. Two of her daughters and one son, one of the daughters a 23-lb. cow.

A 24.8 lb. daughter of Admiral Walker Pietertje and three of her daughters.

Six daughters of Sir Pontiac John Korndyke, who is a 25.9-lb. son of Korndyke Abbecker.

Ten daughters of Woodbine Pontiac Hengerveld, who is by a 31-lb. son of King of the Pontiacs from a 28-lb. three-year-old daughter of King Segis Pontiac and a 27-lb. cow.

The 26-lb. cow, Letty Maud 2d, and three of her daughters.

The 25-lb. cow, Topsy Pride and her 20-lb. three-year-old daughter.

The E. A. Whitford herd contains several cows with records of 10000 to over 14000 lbs. of milk in less than a year, every day work, two milkings a day.

All animals over 6 months of age will be tuberculin tested by state approved veterinarians.

For further particulars write

Liverpool Sale & Pedigree Co., Inc., Sale Mgrs.
Liverpool, New York

Alfalfa in the Chautauqua Grape Belt

(Concluded from page 4)

appears to last from five to six years. After that we plow it up, put the field in corn for one year and re-seed to alfalfa. So far the second seeding seems to be a little better than the first.

Corn, with us, was formerly more or less of a failure, but on account of plowing under the alfalfa sod, which is rich in nitrogen, we now have record yields.

Harvesting the hay is an operation which requires considerable patience. The first cutting requires several days before it is safe to put into the barn, but the difficulties are by no means insurmountable, and if a proper supply of hay cock covers are kept, the hay can be gotten into the barn without its quality deteriorating to any considerable degree, even in a rainy season. The second and third cuttings are lighter and do not give as much trouble. We have been hoping that some one would come out with a system which would enable us to get our hay in with the assurance that it would be kept out of the rain, but to date we have not been able to find any system which would absolutely prevent this trouble.

Our farm is located in the midst of the Chautauqua grape belt, and in spite of the popularity of the grape crop, we consider alfalfa far more profitable.

Encouraging Hired Men

(Concluded from page 4)

call their attention to their deficiencies, but who goes around with a surly bearing and may seek for a month about the misdeeds of a hired man, but never goes to him and tells him about it in a straightforward, manly manner.

I have found that by giving my hired help a small present, such as an addition of \$2 or \$3 to their monthly wage when they have been particularly faithful, along with a word of praise, does a world of good in maintaining a spirit of good fellowship on the farm. I would rather give a present than a raise in wages. The raise in wages the man soon comes to regard as his right, while the present he regards as a gratuity and has that much more respect for his employer.

It also pays to show interest in the man personally. My hired men have families. If the wife or a child of either happens to be sick I inquire about them each day and express my sympathy. When I am going to town I bring the hired men's supplies along with my own. It is a little trouble, but it is well worth the while. I never board hired men except during rush seasons of the year when extra hands are used only a short time. I know from the testimony of dozens of hired men that where they are boarded in the home of the farmer, the farm women have more to do with their contented state of mind than has the employer. A "superior" attitude on the part of the farm wife, some little slighting word and the hired man is in rebellion. And I don't blame him. He has feelings just as the rest of us have. Each of my regular hands occupies a cheap but attractive cottage on my farm. These buildings are not such as some may designate as the hired man's house. They cost only \$650 each, but are attractive, kept well painted, and have several conveniences. These houses are not altogether unproductive, by the way. The men pay a nominal rent for them and in this way I am able to pay them much greater wages. It makes them feel independent to be paying rent for their home, and also it makes them feel good to be able to state that their

wages are so and so, which sounds greater than the wages paid to neighboring hired men who get their house free of rent.

When extra men are hired my regular hands help to provide room for them, the cost of their meals being charged to me. The wife of each man has a garden of her own and each gets all the chickens and eggs she can produce. Each man gets all the milk and butter his family uses free of charge. Fruits for canning are also supplied free. During the holidays, such as Thanksgiving, the men and their families are usually invited to my home, preparations having been made for us all to "enjoy a feast of good things" on such occasions. I have a touring car and on a Sunday or a holiday when either of the men and his family want to visit a relative and I do not intend to use the car myself, I have much pride in letting them have free use of it. Each man understands the operation of the machine thoroughly, giving it as good care as possible and the little wear thus made on it is more than paid for in the good feelings of all concerned. I have not mentioned the question of the amount of wages at all. I feel that the price we farmers can afford to pay our hired men depends not so much on the kind of man we have employed as on the kind of managers we are. Where each day's work is well mapped out, with good teams and machinery one can afford to pay wages that put him above competition in the labor market, and still make his hired help very comfortable.

One Farm that was Made to Pay

A significant instance of what proper methods of farm management can accomplish is afforded by a certain 500-acre farm in central Michigan. For 10 years this farm failed to pay interest on the capital invested. One year after the owners had been induced to make certain radical changes the farm paid all the expenses of operation and returned them 5 per cent. on an investment of \$60,000. The changes which accomplished this financial revolution were as follows:

1. Four-horse machinery was substituted for 2-horse.
2. The unprofitable cows in the dairy herd were weeded out and sold and the money received for them invested in better stock.
3. A silo was built.
4. The foreman was allowed, in addition to his salary, 10 per cent. of the net income from the farm. The expenses of operating the farm, but not the interest on the capital, were deducted from the income before the foreman received his percentage.

It was this last suggestion which met with the most opposition from the owners of the farm, but when it was pointed out to them that for every dollar the foreman got under such an arrangement they would get \$9 they yielded.

Some Facts About Limestone

A ton of absolutely pure limestone would burn to a little over half its weight of lime, or about 1,120 pounds, which, counting 80 pounds to a bushel, would give 14 bushels of lime to a ton. The weight of the burned product, however, generally averages more than this, owing to impurities in the limestone and also because in ordinary kilns the combustion is not complete enough to drive off all the carbon dioxide.

A cubic foot of limestone averages in weight from 145 to 175 pounds, which would make a ton of limestone contain from 11 to 14 cubic feet.

SEARS, ROEBUCK AND CO. CHICAGO.



Economy Gasoline Engines

Built to operate on gasoline, kerosene, natural or artificial gas. Equipped with Webster magneto at small additional cost. Shipped immediately from a warehouse near you. Satisfactory service guaranteed. Tested and rated by University Experts, with a large surplus of power. Don't buy a gasoline engine until you have seen our special proposition as explained below.

SPECIAL SALE ENGINES AND BUGGIES

We are making special inducements to early buyers during January and February that will enable you to make a bigger saving in the purchase of a gasoline engine or buggy than you can make at any other time of the year.

If you are interested in gasoline engines, write for our special January and February Engine Proposition No. 66P16. If you are interested in buggies, write for our special January and February Proposition on American Beauty Buggies No. 66P16.

Don't buy a buggy or engine until you have seen this special proposition, as it means a big saving to you.

American Beauty Buggies

We are headquarters for American Beauty Buggies. We sell more buggies than any other two manufacturers in the country.

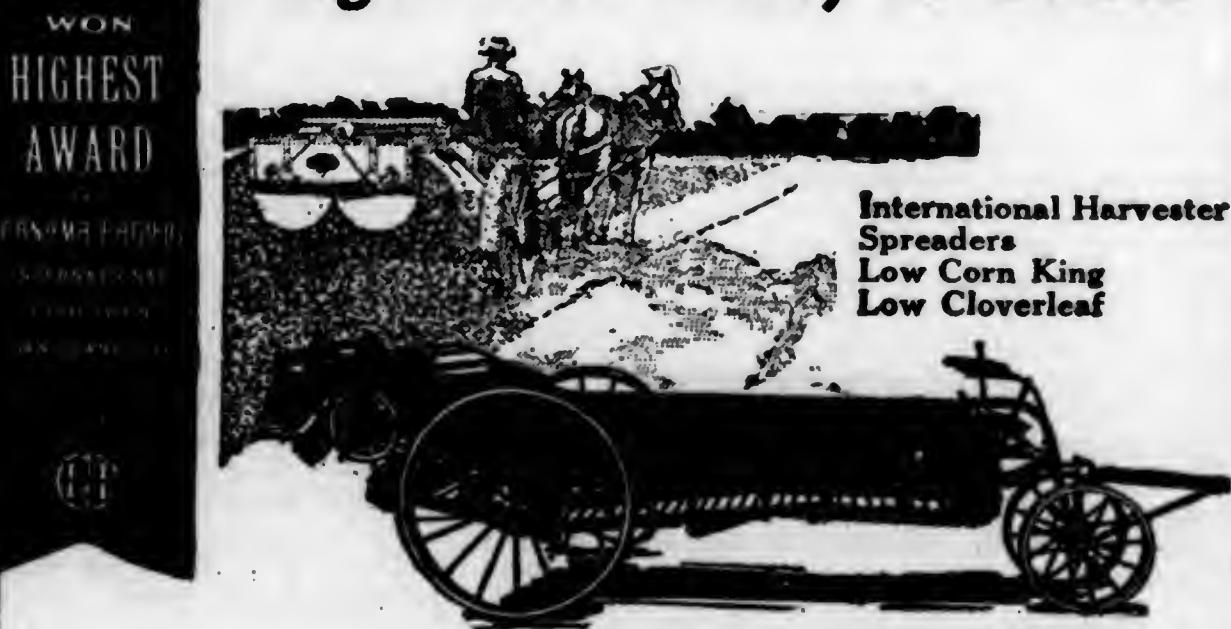
You will save twenty to thirty dollars if you buy an American Beauty Buggy from us. Because of our manufacturing facilities and tremendous output, we are able to give you better value in our American Beauty Buggies at lower prices than anyone else.

Our American Beauty Buggies have won the lead on account of high quality and low price. We ship them from a warehouse near you. Send for our Special Proposition during January and February, as explained above.



SEARS, ROEBUCK AND CO. CHICAGO.

Eight Feet Wide, or Better



International Harvester Spreaders
Low Corn King
Low Cloverleaf

ONCE you have seen both kinds of work you will say: "There is certainly a wide gulf between the ordinary spreader and the modern IHC machine, with its good, wide-spreading device. Give me the up-to-date, time and labor-saving spreader."

International Harvester spreaders—Low Corn King and Low Cloverleaf—are made with wide spreaders that throw the manure out in a wide, even spread, and broken up into fine particles by the disks that give it a second beating. In this condition the soil takes up quickly and evenly the fertilizing elements.

Though they are narrow, conveniently handled spreaders, easy to drive right into stables for loading, they spread to a width of 8 feet, or better. This cuts the spreading time in half, increases the tractive power of the spreader by keeping the wheels off the slippery manure, and gives you the best machine made for top dressing. IHC spreaders are simply built, and very strong. They are low for easy loading. They are built in sizes to suit any buyer, and they do work that is uniformly satisfactory.

Be sure to see the IHC dealer who can sell you a Low Corn King or Low Cloverleaf—or write us for catalogue.

International Harvester Company of America

(Incorporated) CHICAGO USA

Champion Deering McCormick Milwaukee Osborne Plano

Double Your Dollars Now!

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Wire and Fencing Priced Low! Down Go All Roofing Prices!

Barbed Wire Less Than 3c Strong Fencing 15c Buys Metal Roofing 40c Buys Ready Roofing 96c Buys Red or Gray Slate Roofing 96c

Here again our extensive operations and Per Rod big deals enable us to quote heretofore unheard of low prices. Strong, heavy fencing fortunately secured recently at our own price.

A splendid fencing for hogs and all general farm purposes. 24-inch, 7 line wires high. Square mesh, stays 12 inches apart. Put up in rolls of 20, 30 and 40 rods. Order by lot No. A-1-35. Same as above, except stay spaced 6 inches, per rod, 21c. Order by lot No. A-1-36. Same as above, except stay spaced 4 inches, per rod, 22c. Order by lot No. A-1-37. Same as above, except stay spaced 3 inches, per rod, 23c. Order by lot No. A-1-38. Same as above, except stay spaced 2 inches, per rod, 24c. Order by lot No. A-1-39. Same as above, except stay spaced 1 1/2 inches, per rod, 25c. Order by lot No. A-1-40. Same as above, except stay spaced 1 inch, per rod, 26c. Order by lot No. A-1-41. Same as above, except stay spaced 3/4 inch, per rod, 27c. Order by lot No. A-1-42. Same as above, except stay spaced 1/2 inch, per rod, 28c. Order by lot No. A-1-43. Same as above, except stay spaced 3/8 inch, per rod, 29c. Order by lot No. A-1-44. Same as above, except stay spaced 1/4 inch, per rod, 30c. Order by lot No. A-1-45. Same as above, except stay spaced 1/8 inch, per rod, 31c. Order by lot No. A-1-46. Same as above, except stay spaced 1/16 inch, per rod, 32c. Order by lot No. A-1-47. Same as above, except stay spaced 1/32 inch, per rod, 33c. Order by lot No. A-1-48. Same as above, except stay spaced 1/64 inch, per rod, 34c. Order by lot No. A-1-49. Same as above, except stay spaced 1/128 inch, per rod, 35c. Order by lot No. A-1-50. Same as above, except stay spaced 1/256 inch, per rod, 36c. Order by lot No. A-1-51. Same as above, except stay spaced 1/512 inch, per rod, 37c. Order by lot No. A-1-52. Same as above, except stay spaced 1/1024 inch, per rod, 38c. Order by lot No. A-1-53. Same as above, except stay spaced 1/2048 inch, per rod, 39c. Order by lot No. A-1-54. Same as above, except stay spaced 1/4096 inch, per rod, 40c. Order by lot No. A-1-55. Same as above, except stay spaced 1/8192 inch, per rod, 41c. Order by lot No. A-1-56. Same as above, except stay spaced 1/16384 inch, per rod, 42c. Order by lot No. A-1-57. Same as above, except stay spaced 1/32768 inch, per rod, 43c. Order by lot No. A-1-58. Same as above, except stay spaced 1/65536 inch, per rod, 44c. Order by lot No. A-1-59. Same as above, except stay spaced 1/131072 inch, per rod, 45c. Order by lot No. A-1-60. Same as above, except stay spaced 1/262144 inch, per rod, 46c. Order by lot No. A-1-61. Same as above, except stay spaced 1/524288 inch, per rod, 47c. Order by lot No. A-1-62. Same as above, except stay spaced 1/1048576 inch, per rod, 48c. Order by lot No. A-1-63. Same as above, except stay spaced 1/2097152 inch, per rod, 49c. Order by lot No. A-1-64. Same as above, except stay spaced 1/4194304 inch, per rod, 50c. Order by lot No. A-1-65. Same as above, except stay spaced 1/8388608 inch, per rod, 51c. Order by lot No. A-1-66. Same as above, except stay spaced 1/16777216 inch, per rod, 52c. Order by lot No. A-1-67. Same as above, except stay spaced 1/33554432 inch, per rod, 53c. Order by lot No. A-1-68. Same as above, except stay spaced 1/67108864 inch, per rod, 54c. Order by lot No. A-1-69. Same as above, except stay spaced 1/134217728 inch, per rod, 55c. Order by lot No. A-1-70. Same as above, except stay spaced 1/268435456 inch, per rod, 56c. Order by lot No. A-1-71. Same as above, except stay spaced 1/536870912 inch, per rod, 57c. Order by lot No. A-1-72. Same as above, except stay spaced 1/1073741824 inch, per rod, 58c. Order by lot No. A-1-73. Same as above, except stay spaced 1/2147483648 inch, per rod, 59c. Order by lot No. A-1-74. Same as above, except stay spaced 1/4294967296 inch, per rod, 60c. Order by lot No. A-1-75. Same as above, except stay spaced 1/8589934592 inch, per rod, 61c. Order by lot No. A-1-76. Same as above, except stay spaced 1/17179869184 inch, per rod, 62c. Order by lot No. A-1-77. Same as above, except stay spaced 1/34359738368 inch, per rod, 63c. Order by lot No. A-1-78. Same as above, except stay spaced 1/68719476736 inch, per rod, 64c. Order by lot No. A-1-79. Same as above, except stay spaced 1/137438953472 inch, per rod, 65c. Order by lot No. A-1-80. Same as above, except stay spaced 1/274877906944 inch, per rod, 66c. Order by lot No. A-1-81. Same as above, except stay spaced 1/549755813888 inch, per rod, 67c. Order by lot No. A-1-82. Same as above, except stay spaced 1/1099511627776 inch, per rod, 68c. Order by lot No. A-1-83. Same as above, except stay spaced 1/2199023255552 inch, per rod, 69c. Order by lot No. A-1-84. Same as above, except stay spaced 1/4398046511104 inch, per rod, 70c. Order by lot No. A-1-85. Same as above, except stay spaced 1/8796093022208 inch, per rod, 71c. Order by lot No. A-1-86. Same as above, except stay spaced 1/17592186044416 inch, per rod, 72c. Order by lot No. A-1-87. Same as above, except stay spaced 1/35184372088832 inch, per rod, 73c. Order by lot No. A-1-88. Same as above, except stay spaced 1/70368744177664 inch, per rod, 74c. Order by lot No. A-1-89. Same as above, except stay spaced 1/140737488355328 inch, per rod, 75c. Order by lot No. A-1-90. Same as above, except stay spaced 1/281474976710656 inch, per rod, 76c. Order by lot No. A-1-91. Same as above, except stay spaced 1/562949953421312 inch, per rod, 77c. Order by lot No. A-1-92. Same as above, except stay spaced 1/1125899906842624 inch, per rod, 78c. Order by lot No. A-1-93. Same as above, except stay spaced 1/2251799813685248 inch, per rod, 79c. Order by lot No. A-1-94. Same as above, except stay spaced 1/4503599627370496 inch, per rod, 80c. Order by lot No. A-1-95. Same as above, except stay spaced 1/9007199254740992 inch, per rod, 81c. Order by lot No. A-1-96. Same as above, except stay spaced 1/18014398509481984 inch, per rod, 82c. Order by lot No. A-1-97. Same as above, except stay spaced 1/36028797018963968 inch, per rod, 83c. Order by lot No. A-1-98. Same as above, except stay spaced 1/72057594037927936 inch, per rod, 84c. Order by lot No. A-1-99. Same as above, except stay spaced 1/144115188075855872 inch, per rod, 85c. Order by lot No. A-1-100. Same as above, except stay spaced 1/288230376151711744 inch, per rod, 86c. Order by lot No. A-1-101. Same as above, except stay spaced 1/576460752303423488 inch, per rod, 87c. Order by lot No. A-1-102. Same as above, except stay spaced 1/1152921504606846976 inch, per rod, 88c. Order by lot No. A-1-103. Same as above, except stay spaced 1/2305843009213693952 inch, per rod, 89c. Order by lot No. A-1-104. Same as above, except stay spaced 1/4611686018427387904 inch, per rod, 90c. Order by lot No. A-1-105. Same as above, except stay spaced 1/9223372036854775808 inch, per rod, 91c. Order by lot No. A-1-106. Same as above, except stay spaced 1/18446744073709551616 inch, per rod, 92c. Order by lot No. A-1-107. Same as above, except stay spaced 1/36893488147419103232 inch, per rod, 93c. Order by lot No. A-1-108. Same as above, except stay spaced 1/73786976294838206464 inch, per rod, 94c. Order by lot No. A-1-109. Same as above, except stay spaced 1/147573952589676412928 inch, per rod, 95c. Order by lot No. A-1-110. Same as above, except stay spaced 1/295147905179352825856 inch, per rod, 96c. Order by lot No. A-1-111. Same as above, except stay spaced 1/590295810358705651712 inch, per rod, 97c. Order by lot No. A-1-112. Same as above, except stay spaced 1/1180591620717411303424 inch, per rod, 98c. Order by lot No. A-1-113. Same as above, except stay spaced 1/2361183241434822606848 inch, per rod, 99c. Order by lot No. A-1-114. Same as above, except stay spaced 1/4722366482869645213696 inch, per rod, 100c. Order by lot No. A-1-115. Same as above, except stay spaced 1/9444732965739290427392 inch, per rod, 101c. Order by lot No. A-1-116. Same as above, except stay spaced 1/18889465931478580854784 inch, per rod, 102c. Order by lot No. A-1-117. Same as above, except stay spaced 1/37778931862957161709568 inch, per rod, 103c. Order by lot No. A-1-118. Same as above, except stay spaced 1/75557863725914323419136 inch, per rod, 104c. Order by lot No. A-1-119. Same as above, except stay spaced 1/151115727451828646838272 inch, per rod, 105c. Order by lot No. A-1-120. Same as above, except stay spaced 1/302231454903657293676544 inch, per rod, 106c. Order by lot No. A-1-121. Same as above, except stay spaced 1/604462909807314587353088 inch, per rod, 107c. Order by lot No. A-1-122. Same as above, except stay spaced 1/1208925819614629174706176 inch, per rod, 108c. Order by lot No. A-1-123. Same as above, except stay spaced 1/2417851639229258349412352 inch, per rod, 109c. Order by lot No. A-1-124. Same as above, except stay spaced 1/4835703278458516698824704 inch, per rod, 110c. Order by lot No. A-1-125. Same as above, except stay spaced 1/9671406556917033397649408 inch, per rod, 111c. Order by lot No. A-1-126. Same as above, except stay spaced 1/19342813113834066795298816 inch, per rod, 112c. Order by lot No. A-1-127. Same as above, except stay spaced 1/38685626227668133590597632 inch, per rod, 113c. Order by lot No. A-1-128. Same as above, except stay spaced 1/77371252455336267181195264 inch, per rod, 114c. Order by lot No. A-1-129. Same as above, except stay spaced 1/154742504910672534362390528 inch, per rod, 115c. Order by lot No. A-1-130. Same as above, except stay spaced 1/309485009821345068724781056 inch, per rod, 116c. Order by lot No. A-1-131. Same as above, except stay spaced 1/618970019642690137449562112 inch, per rod, 117c. Order by lot No. A-1-132. Same as above, except stay spaced 1/1237940039285380274899124224 inch, per rod, 118c. Order by lot No. A-1-133. Same as above, except stay spaced 1/2475880078570760549798248448 inch, per rod, 119c. Order by lot No. A-1-134. Same as above, except stay spaced 1/4951760157141521099596496896 inch, per rod, 120c. Order by lot No. A-1-135. Same as above, except stay spaced 1/9903520314283042199192993792 inch, per rod, 121c. Order by lot No. A-1-136. Same as above, except stay spaced 1/1980704062856608439838588784 inch, per rod, 122c. Order by lot No. A-1-137. Same as above, except stay spaced 1/3961408125713216879677177568 inch, per rod, 123c. Order by lot No. A-1-138. Same as above, except stay spaced 1/7922816251426433759354355136 inch, per rod, 124c. Order by lot No. A-1-139. Same as above, except stay spaced 1/15845632502852867518708710272 inch, per rod, 125c. Order by lot No. A-1-140. Same as above, except stay spaced 1/31691265005705735037417420544 inch, per rod, 126c. Order by lot No. A-1-141. Same as above, except stay spaced 1/63382530011411470074834841088 inch, per rod, 127c. Order by lot No. A-1-142. Same as above, except stay spaced 1/126765060022822940149669682176 inch, per rod, 128c. Order by lot No. A-1-143. Same as above, except stay spaced 1/253530120045645880299339364352 inch, per rod, 129c. Order by lot No. A-1-144. Same as above, except stay spaced 1/507060240091291760598678728704 inch, per rod, 130c. Order by lot No. A-1-145. Same as above, except stay spaced 1/1014120480182583521197357457408 inch, per rod, 131c. Order by lot No. A-1-146. Same as above, except stay spaced 1/2028240960365167042394714914816 inch, per rod, 132c. Order by lot No. A-1-147. Same as above, except stay spaced 1/4056481920730334084789429829632 inch, per rod, 133c. Order by lot No. A-1-148. Same as above, except stay spaced 1/8112963841460668169578859659264 inch, per rod, 134c. Order by lot No. A-1-149. Same as above, except stay spaced 1/1622592762921333633917711919728 inch, per rod, 135c. Order by lot No. A-1-150. Same as above, except stay spaced 1/3245185525842667267835423839456 inch, per rod, 136c. Order by lot No. A-1-151. Same as above, except stay spaced 1/6490371051685334535670847678912 inch, per rod, 137c. Order by lot No. A-1-152. Same as above, except stay spaced 1/12980742103370669071341695577824 inch, per rod, 138c. Order by lot No. A-1-153. Same as above, except stay spaced 1/25961484206741338142683391155648 inch, per rod, 139c. Order by lot No. A-1-154. Same as above, except stay spaced 1/51922968413482676285366782311296 inch, per rod, 140c. Order by lot No. A-1-155. Same as above, except stay spaced 1/103845936827965352570733564622592 inch, per rod, 141c. Order by lot No. A-1-156. Same as above, except stay spaced 1/207691873655930705141467129245184 inch, per rod, 142c. Order by lot No. A-1-157. Same as above, except stay spaced 1/415383747311861410282934258490368 inch, per rod, 143c. Order by lot No. A-1-158. Same as above, except stay spaced 1/830767494623722820565868516980736 inch, per rod, 144c. Order by lot No. A-1-159. Same as above, except stay spaced 1/1661534989247445641131737033961472 inch, per rod, 145c. Order by lot No. A-1-160. Same as above, except stay spaced 1/3323069978494891282263474067922944 inch, per rod, 146c. Order by lot No. A-1-161. Same as above, except stay spaced 1/6646139956989782564526948135845888 inch, per rod, 147c. Order by lot No. A-1-162. Same as above, except stay spaced 1/13292279913979565129053896271691776 inch, per rod, 148c. Order by lot No. A-1-163. Same as above, except stay spaced 1/26584559827959130258107792543383552 inch, per rod, 149c. Order by lot No. A-1-164. Same as above, except stay spaced 1/53169119655918260516215585086767104 inch, per rod, 150c. Order by lot No. A-1-165. Same as above, except stay spaced 1/106338239311836521032431170173534208 inch, per rod, 151c. Order by lot No. A-1-166. Same as above, except stay spaced 1/212676478637673042064862340347068416 inch, per rod, 152c. Order by lot No. A-1-167. Same as above, except stay spaced 1/425352957275346084129724680694136832 inch, per rod, 153c. Order by lot No. A-1-168. Same as above, except stay spaced 1/850705914550692168259449361388273664 inch, per rod, 154c. Order by lot No. A-1-169. Same as above, except stay spaced 1/1701411829101384336518898722776547328 inch, per rod, 155c. Order by lot No. A-1-170. Same as above, except stay spaced 1/3402823658202768673037797445553094656 inch, per rod, 156c. Order by lot No. A-1-171. Same as above, except stay spaced 1/68056473164055373460755948911061891312 inch, per rod, 157c. Order by lot No. A-1-172. Same as above, except stay spaced 1/136112946328110746921511897822123822624 inch, per rod, 158c. Order by lot No. A-1-173. Same as above, except stay spaced 1/272225892656221483843023795644247645248 inch, per rod, 159c. Order by lot No. A-1-174. Same as above, except stay spaced 1/544451785312442967686047591288495290496 inch, per rod, 160c. Order by lot No. A-1-175. Same as above, except stay spaced 1/1088903570624885935372095182576990580992 inch, per rod, 161c. Order by lot No. A-1-176. Same as above, except stay spaced 1/2177807141249771870744190365153981161984 inch, per rod, 162c. Order by lot No. A-1-177. Same as above, except stay spaced 1/4355614282499543741488380730307962323968 inch, per rod, 163c. Order by lot No. A-1-178. Same as above, except stay spaced 1/8711228564999087482976761460615924647936 inch, per rod, 164c. Order by lot No. A-1-179. Same as above, except stay spaced 1/17422457129998174757953522912278451295872 inch, per rod, 165c. Order by lot No. A-1-180. Same as above, except stay spaced 1/34844914259996349515907045824556902591744 inch, per rod, 166c. Order by lot No. A-1-181. Same as above, except stay spaced 1/69689828519992699031814091649113805183488 inch, per rod, 167c. Order by lot No. A-1-182. Same as above, except stay spaced 1/139379657039975398063628183298227610366976 inch, per rod, 168c. Order by lot No. A-1-183. Same as above, except stay spaced 1/278759314079750796127256366596455220733952 inch, per rod, 169c. Order by lot No. A-1-184. Same as above, except stay spaced 1/55751862815950159225451273319291044146784 inch, per rod, 170c. Order by lot No. A-1-185. Same as above, except stay spaced 1/111503725631900318450902546638582088913568 inch, per rod, 171c. Order by lot No. A-1-186. Same as above, except stay spaced 1/223007451263800636901805093277164177827136 inch, per rod, 172c. Order by lot No. A-1-187. Same as above, except stay spaced 1/446014902527601273803610186554328355654272 inch, per rod, 173c. Order by lot No. A-1-188. Same as above, except stay spaced 1/892029805055202547607220373108656711308544 inch, per rod, 174c. Order by lot No. A-1-189. Same as above, except stay spaced 1/178405961011040509521444074621711342169088 inch, per rod, 175c. Order by lot No. A-1-190. Same as above, except stay spaced 1/356811922022081019042888149243422684433776 inch, per rod, 176c. Order by lot No. A-1-191. Same as above, except stay spaced 1/713623844044162038085776298486845368667536 inch, per rod, 177c. Order by lot No. A-1-192. Same as above, except stay spaced 1/1427247688088324076171552596973690737335072 inch, per rod, 178c. Order by lot No. A-1-193. Same as above, except stay spaced 1/2854495376176648152343105193947381474670144 inch, per rod, 179c. Order by lot No. A-1-194. Same as above, except stay spaced 1/5708990752353296304686210387894762949340288 inch, per rod, 180c. Order by lot No. A-1-195. Same as above, except stay spaced 1/11417981504706592609372420775789525898680576 inch, per rod, 181c. Order by lot No. A-1-196. Same as above, except stay spaced 1/22835963009413185218744841551579051797361152 inch, per rod, 182c. Order by lot No. A-1-197. Same as above, except stay spaced 1/45671926018826370437489683023158103587322304 inch, per rod, 183c. Order by lot No. A-1-198. Same as above, except stay spaced 1/91343852037652740874979366046316207174644608 inch, per rod, 184c. Order by lot No. A-1-199. Same as above, except stay spaced 1/182687704075305481499598732092632414349289216 inch, per rod, 185c. Order by lot No. A-1-200. Same as above, except stay spaced 1/365375408150610962999197464185264828698578432 inch, per rod, 186c. Order by lot No. A-1-201. Same as above, except stay spaced 1/730750816301221925998394928370529657397156864 inch, per rod, 187c. Order by lot No. A-1-202. Same as above, except stay spaced 1/1461501632602443851996789856741059314794313728 inch, per rod, 188c. Order by lot No. A-1-203. Same as above, except stay spaced 1/2923003265204887703993579713482118629588627456 inch, per rod, 189c. Order by lot No. A-1-204. Same as above, except stay spaced 1/5846006530409775407987159426964237259177254912 inch, per rod, 190c. Order by lot No. A-1-205. Same as above, except stay spaced 1/11692013060819550815974318853928474518354509824 inch, per rod, 191c. Order by lot No. A-1-206. Same as above, except stay spaced 1/23384026121639101631948637707856949036709019648 inch, per rod, 192c. Order by lot No. A-1-207. Same as above, except stay spaced 1/46768052243278203263897275415713898073418039296 inch, per rod, 193c. Order by lot No. A-1-208. Same as above, except stay spaced 1/93536104486556406527794550831427796146836078592 inch, per rod, 194c. Order by lot No. A-1-209. Same as above, except stay spaced 1/187072208973112813055589101662855592293672157184 inch, per rod, 195c. Order by lot No. A-1-210. Same as above, except stay spaced 1/374144417946225626111178203325711184587344314368 inch, per rod, 196c. Order by lot No. A-1-211. Same as above, except stay spaced 1/748288835892451252222356406651422371171688628736 inch, per rod, 197c. Order by lot No. A-1-212. Same as above, except stay spaced 1/1496577671784902504444712813308444342343377257472 inch, per rod, 198c. Order by lot No. A-1-213. Same as above, except stay spaced 1/2993155343569805008889425626616888684686754514944 inch, per rod, 199c. Order by lot No. A-1-214. Same as above, except stay spaced 1/5986310687139610017778851253233777369373509029984 inch, per rod, 200c. Order by lot No. A-1-215. Same as above, except stay spaced 1/11972621374279220035557702506467547378747018599968 inch, per rod, 201c. Order by lot No. A-1-216. Same as above, except stay spaced 1/23945242748558440071115405012935094757494037199936 inch, per rod, 202c. Order by lot No. A-1-217. Same as above, except stay spaced 1/47890485497116880142230810025870189514988074399872 inch, per rod, 203c. Order by lot No. A-1-218. Same as above, except stay spaced 1/95780970994233760284461620051740379029976148799744 inch, per rod, 204c. Order by lot No. A-1-219. Same as above, except stay spaced 1/191561941988467520568923240103480740059952297599488 inch, per rod, 205c. Order by lot No. A-1-220. Same as above, except stay spaced 1/383123883976935041137846480206961480119904595198976 inch, per rod, 206c. Order by lot No. A-1-221. Same as above, except stay spaced 1/766247767953870082275692960413922960239809190397952 inch, per rod, 207c. Order by lot No. A-1-222. Same as above, except stay spaced 1/1532495535907740164551385920827845920479618380795904 inch, per rod, 208c. Order by lot No. A-1-223. Same as above, except stay spaced 1/3064991071815480329102771841655691840959236761591808 inch, per rod, 209c. Order by lot No. A-1-224. Same as above, except stay spaced 1/6129982143630960658205543683311383681918473523183616 inch, per rod, 210c. Order by lot No. A-1-225. Same as above, except stay spaced 1/12259964287261921316411087366622767363836947046367232 inch, per rod, 211c. Order by lot No. A-1-226. Same as above, except stay spaced 1/24519928574523842632822174733245534727673894092734464 inch, per rod, 212c. Order by lot No. A-1-227. Same as above, except stay spaced 1/490398571490476852656443494664910694553478881854688 inch, per rod, 213c. Order by lot No. A-1-228. Same as above, except stay spaced 1/9807971429809537053128869893298213891069577637093776 inch, per rod, 214c. Order by lot No. A-1-229. Same as above, except stay spaced 1/1961594285961907410625773978658422778213911554187552 inch, per rod, 215c. Order by lot No. A-1-230. Same as above, except stay spaced 1/3923188571923814821251547957316845556427223108775008 inch, per rod, 216c. Order by lot No. A-1-231. Same as above, except stay spaced 1/7846377143847629642503095914633691112854446217550016 inch, per rod, 217c. Order by lot No. A-1-232. Same as above, except stay spaced 1/1569275428769525928500619182926738225088889243500032 inch, per rod, 218c. Order by lot No. A-1-233. Same as above, except stay spaced 1/3138550857539051857001238365853476450177778487000064 inch, per rod, 219c. Order by lot No. A-1-234. Same as above, except stay

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JANUARY 15, 1916



IT is with great sorrow that we announce to our readers the death on New Year's Day of our good friend, and theirs, Mr. T. B. Terry. For over twenty-five years Mr. Terry has contributed regularly to this paper, and "Terry's Talks" have been eagerly read by nearly every reader of The Practical Farmer. During his connection with this paper, Mr. Terry has written on a broad range of subjects, covering every phase of agriculture, and in addition has contributed a most valuable series of health talks through which a great many of our readers have profited in renewed good health.

Mr. Terry's death resulted from the recurrence of a malady which afflicted him twenty years ago, at which time his doctors told him that he could not recover, and expected his death in a very short time. In this emergency Mr. Terry exerted his indomitable will and courage; he studied his own case carefully and through a strict system of dieting, exercise, bathing, etc., he restored himself to perfect health; it was the knowledge and experience thus gained which Mr. Terry put into his health articles which have done so much good to readers of this paper. It was only when the weakening effect of advancing years joined hands with his old malady that he succumbed.

A host of our readers will join us in mourning for this wise and kindly gentleman whose highest aim always was to aid others and give them the benefit of the experience which he himself had gained through years of toil and a valiant fight against ill health.

Our Orchard Number

IN presenting this, our Orchard Number, we wish to thank our many friends who have contributed to it. The articles submitted were by far the best that have been offered for any of our orchard numbers, and our only regret is that space does not permit us to print every one. The contributions were so full of merit, and the subjects selected so practical that it was only after careful study that we awarded the prizes.

In the final analysis we awarded the first prize to Mr. Jager for his manuscript, "The Home Orchard." His article is of interest to every farmer and full of help to the professional fruit grower as well. His experience will help others and his suggestions are practical.

Every reader will appreciate the human endeavor in Mrs. Hoffman's article, which we gave second prize. She shows very plainly what can be done where one has spunk and perseverance. Just how the old orchard was made to pay and how it is kept on a paying basis will be appreciated by every reader. The suggestions she offers are excellent and we believe that this article will be read carefully by every one.

Mr. Pike, in the third prize article, handles the subject of peach growing in a masterly manner. The details of peach growing are carefully given and an excellent selection of varieties is suggested. The hints on picking and packing are right to the point, and marketing is not overlooked.

"Growing Apples for Local or Special Markets" is a tip top article full of common sense and one that is needed to bring out the home market development idea. Mr. Sanger is working along right lines and hits the very root of the marketing question. Of the two, the growing of fruit is more simple than the successful marketing of it, which is a problem that must soon be solved. This article should set every fruit grower thinking carefully on the market question.

You have already noticed that our Horticultural Editor, Mr. C. A. McCue, started his series of articles on spraying problems in our issue of Jan. 1st, and for several issues will discuss this interesting and important subject. Fruit growing is one of the principle branches of farming and we are pleased to see so much interest evidenced.

Two More Special Numbers

WE want to remind our readers that our issue of Feb. 15th will be largely devoted to the subject of Poultry, and our issue of March 1st to the Garden and Truck Growing.

In our issue of Dec. 15th, page 193, we gave particulars, list of prizes, etc., for our Poultry Number, and in the issue of Jan. 1st, page 4, an announcement of the Garden and Truck Number, together with a list of prizes, will be found.

Much interest is being evidenced in our special numbers and we want you to write of your experience. Tell just what you have done, both successes and failures; it will help you, and others, too. Send your articles in at once.

Progress of Prohibition

AN effective answer to the charge made by the liquor interests that prohibition does not prohibit is contained in the report of the Commissioner of Internal Revenue recently submitted to Congress. This report shows that during the fiscal year ending June 1, 1915, there were 42,477,492 gallons less liquor manufactured in the U. S. than during the preceding year. Production of fermented beverages, such as beer, showed a decrease of 6,381,263 barrels from the year previous.

These figures show conclusively that the death knell of alcohol has been sounded and that our people are beginning to realize the grave dangers to our boys that lurk in the saloons and drinking places.

It is most interesting to note that on January 1st the states of Colorado, Iowa, Washington, Oregon, Idaho, Arkansas and South Carolina joined the ranks of the Prohibitionists. With Virginia, where prohibition becomes effective on November 1, 1916, nineteen states will be in the "dry" column. Five other states, Nebraska, California, Michigan, South Dakota, Vermont and the territory of Alaska will vote on state-wide prohibition this year.

Powerful interests are at work trying to block the temperance cause at every turn, but they are losing

out. Right is bound to predominate, and education will soon drive rum from our shores.

The argument that the liquor men use so frequently is that there is loss of internal revenue to the government through the decrease in the consumption of liquor. True, there may be a loss of revenue, but there will be more than a corresponding saving in other ways. After all, the lives of our children are worth more than taxes, and character is not to be measured in dollars and cents.

In Russia, where a ban has been put on the manufacture and sale of vodka, the national alcoholic drink, the savings have increased from 300 to 500 per cent. over previous years. These savings are largely among the peasant class, who were largely addicted to the use of vodka. This saving in spite of the fierce war that is being waged, is nothing short of marvelous.

It is our imperative duty as citizens to help those that are weaker than ourselves. We may be able to withstand temptation and let liquor alone, but as there are so many that can not, we must use our efforts and influence to banish it entirely from the face of our fair country.

Something Worth Watching

THIS year the state of Wisconsin enters on an experiment with her male convicts which promises, at least, to be interesting. The law provides for letting out the convict labor to the highest bidder for work on the highways of the state. The bidding is to be done by the authorities of the several counties, the work to be done on the highways of the counties to which the labor is allotted. The state authorities, by its agents, will have direct control of the convicts while they are at work, and be responsible for their proper treatment by those employing them.

Convict labor has been let out to private contractors in different states, and, as a rule, with unsatisfactory results as far as the effect on the unwilling wards of the state was concerned. In some instances the system was a disgrace to the state which benefited by it, and a stench in the nostrils of all humane and law-abiding citizens. The weak point in this private contract system was that the convicts were under the absolute control of the contractors and their hired overseers, who had no other object than to get the most work at the least expense out of the men and boys who were committed to their charge, without regard to either their moral or physical well being.

The Wisconsin experiment will put the convicts under the direct control of the prison authorities, the same as they would be within the prison walls.

This convict labor will be put where it will do the most good, and where it will come in the least harmful competition with free, full paid labor. Heretofore the inmates of the Wisconsin State Prison have been employed in the manufacture of binding twine, shoes, furniture and other articles of domestic production, which have come into direct competition with the better paid labor of free men and women, to the detriment of the latter. Hereafter, if the experiment is a success, this labor will be employed for several months in the year on work for which it is at times difficult to get other labor in required abundance, and at a less cost. Good roads are coming more and more to be recognized as one of the prime necessities in profitable and up-to-date farming. Prison labor, under the Wisconsin idea, ought to be able to make them.

And if this Wisconsin idea should be a success, prison labor might also be profitably used in helping to save the crops, and be a direct help to many a farmer in a tight place during the harvest months.

Bulletin Helps for Farmers

"Alfalfa in Delaware," by A. E. Grantham (who, as our readers know, is editor of our Soils and Field Crops Dept.), is the title of Bulletin No. 110, issued by the Delaware College Experiment Station at Newark, Del. This bulletin covers every phase of alfalfa growing in this section in a most comprehensive manner and should be studied by every farmer. It is practical, authentic and up to the minute.

Stock raisers and veterinarians generally will be interested in Bulletin No. 370, issued by the U. S. Dept. of Agriculture, Washington, D. C., on "Experiments in Vaccination Against Anthrax."

Those interested in the methods of pruning and training used in this country will find them illustrated and described in Farmers' Bulletin No. 471, entitled, "Grape Propagation, Pruning and Training," Department of Agriculture, Washington, D. C.

SECOND PRIZE ARTICLE

Fruit + Stick-to-it-iveness = Success

By MRS. CAL HOFFMAN

After spending our first two years of married life in a little, poorly built house and a bit of garden, and paying \$50 a year rent, both husband and I toiling for a bare existence, we concluded that if we ever wanted to enjoy any of the real comforts of life we must steer into another channel than the being a stationary engineer. So suiting the act to the conclusion, we purchased our present place of habitation, consisting of a house and barn sadly in need of repair, and 18 acres of land. We started with practically nothing, so the judgment almost exceeded all our earthly possessions. The only things I could

fruit to perfection both in size and color. We keep a horse, cow, 3 to 5 hogs and 100 chickens, and all the available manure we put to the trees and buy commercial fertilizer for the crops.

The first year we picked 135 bushels of fairly good apples, and each succeeding year they have improved in quantity and quality. This fall we picked over 800 bushels. Our winter apples we sell to dealers who grade and pack them themselves; we, of course, haul them to a nearby shipping point. Our summer and fall varieties we grade carefully, barrel them and ship to Philadelphia to a commission man, always realizing



What Fruit Helped to Build. The Home When it was Bought and as it is Now

see in our favor were health and grit. The land was so robbed and starved that weeds were afraid to start. The first thing husband did was go into the orchard (containing about 100 bushy old apple trees, each one representing a thicket) with an ax, saw and pruning shears. Quite a few trees were dead; these he cut into firewood; some the tops were nearly dead but the trunks were good—these he "dehorned." The balance were thinned and the suckers pruned out. As the orchard had never been sprayed the trees were crusty with San Jose scale. Our courage almost failed us, for our funds, which were scarce to begin with, were now exhausted and nothing in sight with which to purchase a spray outfit. But a generous neighbor who had previously tasted of poverty's cup, came to our rescue and loaned us his outfit. We purchased lime-sulphur by giving a note, and I pumped for husband to spray, and we literally soaked those old trees.

I much prefer lime-sulphur to oil sprays. First, lime-sulphur is death to fungous diseases. Second, it never injures trees, while I have known trees to die from the excessive use of oils. In blossom time we sprayed twice with arsenate of lead for codling moth. The orchard had been in sod, I believe, for 40 years. Husband plowed this down and planted to corn, and since then he rotates crops, not expecting much crop, of course, but the tillage brings the

good prices. In the meantime we set the entire place to peach and apple trees. While these trees are small we plant grain crops between and some truck, such as strawberries, raspberries, dewberries, asparagus, cantaloupes and garden truck. Marketing these through the summer brings excellent returns until the trees begin to bear. Of course, we do not have manure for all the trees and then we use a small amount of nitrate for the apple, and potash for the peach trees. The apple trees are kept well thinned and headed fairly low. Thus admitting sunlight and air so essential to perfect fruit and the low head makes easier picking. As soon as the fruit on both apple and peach trees are the size of a walnut we thin them, picking off all defective and surplus fruit. All the faulty culls the dealers discard we haul to a nearby canning house, getting a fair price for them; by so doing we get rid of these worthless apples and many moths and insects. We have brought the land to a good state of fertility by liming, fertilizing and rotating crops. In the way of improvements we have built a wagon shed, chicken house, woodshed, spring house, brooder house, hog pen and auto shed, have a gasoline engine with which to spray and wash, and improved our house from four to nine rooms, installing a telephone, bath room and furnace, purchased a piano for the children and are living comfortably. Pennsylvania.

Spray the Hurst Way



This FREE BOOK

tells you how to protect your trees and crops from the ravages of insect pests and plant diseases. With this book you can go into your orchard, garden or field and by the illustrations in the book you can easily tell what pest is destroying your tree or crop and how to combat it. You need this book because you cannot grow perfect fruit, potato or truck crops without spraying, and you must know all about the different pests and the remedy to use to get the best results. Our own 29 years

of experience and the best information obtainable from the Experiment Stations and the United States Department of Agriculture are covered in this valuable book. It contains 74 illustrations of insect and fungous pests. Used as a text book in many of the Agricultural Schools. Perfect crops are the pride of all progressive growers, and there is

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just the sprayer you need for your work. We give you here only a few extracts from letters from users to give you an idea of what they think of Hurst Sprayers. We will gladly furnish you the names and a long list of testimonials on request.

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year after year. It's the only protection you can get for your crops. In these days when insect and fungous pests are ever on the increase, spraying is absolutely necessary. The only growers who made money out of their fruit or potatoes this past season were those who sprayed and sprayed thoroughly. Write to-day for our Big FREE Book, "Why, How and When to Spray," and name of nearest dealer, and make a profit out of your fruit and truck crops this season. A postal will do, or use this coupon.

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One large packet each of Boston, Blue, Lettuce, Radish and Tomato—

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hope that it might be suggestive and helpful to others, that I am telling this story.

Our soil is medium to light sandy loam. This is a tidewater region, land being level, with an altitude of only about 60 feet above sea level. Therefore many of the leading varieties of the North, and some that succeed in the higher altitudes of this state, are failures here. It is a matter of great importance—or perhaps I should say of first importance—to select the right varieties for the section, and also it is a great mistake to have too many varieties. However, more are required for a local market than when growing for the general market, and for the local market there should be enough varieties to afford a succession and some selection throughout the season. The original block of 125 trees above mentioned has been rather interesting as a test orchard.

The list of varieties planted was about as follows: Sweet Bough, Early Strawberry, Maiden's Blush, Keswick Codling, Fall Rambo, Ben Davis, Paradise, Winter Sweet, Smith Cider, Winesap, Grimes' Golden, York Imperial, Fallwater, Red Astrachan, White Pippin, Fall Pippin, Fall Strawberry, Pennock, Holland Winter, Blenheim, Carolina Red June, Early Ripe, Early Harvest, Virginia Beauty, Carlough, Shockley, Royal Limbertwig, Rome Beauty and Stayman, which last was topworked on to a lot of the most undesirable varieties. About one-third of the trees were summer varieties, for which there is little sale here locally. Our interest is in winter fruit. After our experience with all these varieties, my conclusion is that the value of this orchard to us would be at least doubled provided it were made up of a selection somewhat as follows:

Stayman, Grimes, Winesap, Paragon or M. B. Twig, York, Rome and White Pippin, with one tree each of the following for family use: Yellow Transparent, Red Astrachan, Early Strawberry, Williams' Early Red, Gravenstein and Maryland Maiden Blush. Six years ago we set out a 10-acre orchard. It was laid out with a 2-horse plow, rows 34 feet 8 inches apart one way and crossed off 20 feet apart the other way. In planting each alternate tree in the row is put in as a filler and the fillers in one row are opposite the permanent trees in the next row. This is known as the triangular or hexagonal plan of planting, and with distances given the permanent trees are 40 feet apart each way, with 31 trees to the acre, as against 27 trees by the square method, 40x40 feet. This planting consists of Stayman, Paragon, Winesap, York and Nero for permanent trees, with Grimes' and Jonathan for fillers. If we were now setting this lot over I would leave out the Jonathan, and most probably Nero, and only half as many York as of other varieties. The greatest weakness of the Jonathan is that it is so very susceptible to the blight; York also is badly injured by blight. The Stayman, without doubt, heads the list for value. However, it does not keep late in our home storage, and we need the Winesap and Paragon to continue the season. The Grimes' has made the greatest fame among consumers here, but its season for keeping is very limited. The White Pippin is of similar quality and is of value for us to extend the season into late winter.

We have always followed clean culture, plowing as early in spring as possible, continuing regular cultivation until in July, when we stop working, at that time seeding with crimson clover for a cover crop. In the young orchard we have followed inter-cropping with potatoes and tomatoes, following each

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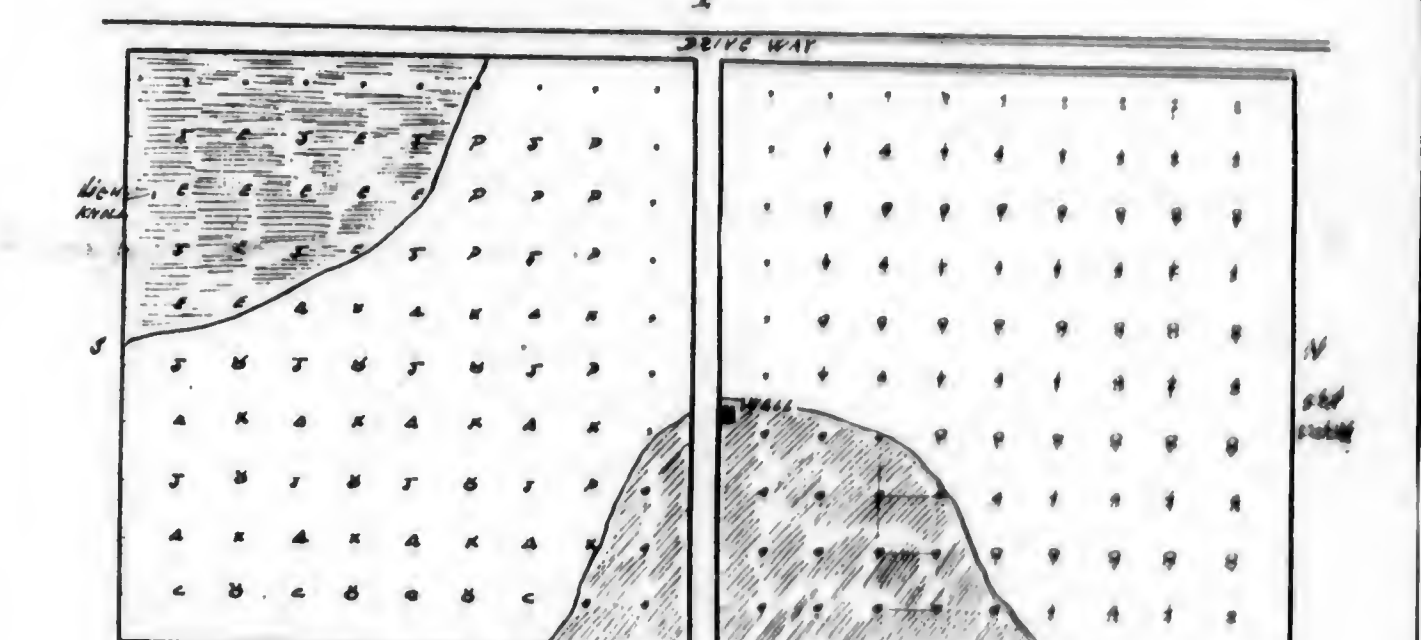
crop with the seeding of crimson clover. However, the past season the clover was omitted, because the growth of trees is becoming too rapid and succulent and they suffered exceedingly during the general outbreak of blight last season. Also the formation of fruit buds is, we believe, being retarded by this growthy condition of the tree. Therefore we must adopt measures to check and harden the growth of the trees. It may be necessary not only to discontinue adding nitrogen, but also to lessen the moisture supply, either by less cultivation or by putting in some crop that will draw heavily upon it. In the lot of the old bearing trees we have been using the crimson clover cover every year for six or eight years without noticing any injurious effects on fruit or trees.

We spray every spring just before the buds open, with winter strength lime-sulphur, 1 gallon of the concentrated solution to 9 gallons of water, and then concern ourselves no further about scale. Within the first week after dropping of blossom petals we give the calyx spray, the most important of all applications for the immediate crop of fruit, and the work should be done most thoroughly. With high pressure and a nozzle giving a heavy driving spray, and with the operator working from the tower of the machine, directing the spray downward and inward toward the tree, the effort should be to reach the calyx cavity of all the little fruits with the solution. We use for this applica-

tion 2 pounds of arsenate of lead and 5 quarts of concentrated lime-sulphur to 50 gallons of water. This spray is repeated in two weeks. About July first we spray again, using 2 pounds arsenate of lead with 3-4-50 formula of Bordeaux mixture. The purpose of this application is to control the second or late brood of codling moth and the late fungi, such as sooty fungus and fly speck, which injure the fruit here very much some seasons, the past season remarkably so. We are troubled considerably with bitter rot, especially on Fallwater, Fall Pippin, Grimes', Ben Davis and White Pippin. Except in the case of the Fallwater we have had a fair degree of success in controlling it by use of Bordeaux mixture, 4-5-50 formula. On these susceptible varieties the first application is made about June 25th and repeated at intervals of two weeks until four applications are made, usually. We have a duplex sprayer, and for general work use an angle nozzle and work with a pressure of about 200 pounds. For the calyx spray, or when spraying against the wind, we use a "drive" angle nozzle with a pressure of 250 pounds.

To keep our winter fruit we store in an insulated, frost-proof room, built in our implement and carriage house. Up until freezing weather comes the temperature of this room is kept as low as possible, by throwing open a door at night in each of two opposite sides, and closing tightly through the day.

Maryland.



and sold, instead of making hog feed and waste.

The Home Orchard

(Concluded from page 23)

and Napoleon are the favorites. A few old residents are still asking for the old Black Oxheart, a deep black, tender species.

In peaches I depend on Elberta and Late Crawford. They fill the bill.

The York State Prune, a selected prune put out by the Dansville nursery-men, is equal to the French prune and harder. It equals the French prune in flavor and is almost as large. One can sell them as German or French prunes, depending on the demand, as they are produced from sports from such. Another plum that should not be forgotten is the Abundance, rightly named. It is a popular variety. For jams and preserving the Shropshire Damsion stands without an equal. The supply of this improved plum over the common Damsion for canning has never been able to fill the demand here.

The Orange quince ends the list of fruit trees, as I find them right for the paying home orchard.

By planting the trees with a good windbreak against the north and west, such as an older orchard or a woodlot will give, the danger of storm damage is less and the surplus fruit can be pick-

ed and sold, instead of making hog feed and waste.

The old rule often mentioned by my father, that great blocks of any one kind of fruit will give more work and worry than mixed orchards, holds as good to-day as it did then. Insects, diseases and reduced crops are apt to follow the large acreage of any one variety, notwithstanding the easier way of spraying and caring for them. The mixed orchard, while it does prove perplexing to spray at the beginning, is, after all, nature's own choice. We do not find naturally grown woodlots of but one kind of trees. All are more or less mixed, and in this mixing alone nature has set a check to ravishing diseases that might come. Bees work better and the sun is able to encourage more the mixed orchard, especially if we have used our head piece to aid nature, and picked the soil as the trees prefer it.

If every tree is an outside tree we know it will produce the best results, and give a crop practically every year. The mixed home orchard is but a step removed from this finding. The good caretaker of such an orchard will discover that he can depend on it for steady annual returns, hence my advice, plant the mixed home orchard, one like the old folks had, the kind that always bore.



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Do you believe that this can be done? Do you average 100 bushels of corn per acre? If you were planning to raise 100 bushels of Corn per acre, at a cost of 12 cents per bushel, how far apart would you space your rows? How far apart would you space your hills in the row? How would you test your seed? When would you plant? How deep would you plant and how many kernels in each hill? How would you make sure of getting ahead of the crows? How much fertilizer would you use and how would you apply it?

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The Deming Schedule is a spraying calendar 16x22 inches in size, listing all kinds of trees, the pests from which they suffer, and the best method of destroying those pests. It helps you pick better profits from your orchards.

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Yes—for, as the Department of Agriculture will tell you, unless you spray intelligently with the best devices, you are not taking all the fruit you can grow to market. And you are not getting the top price for it. Wise spraying is a simple, sure road to bigger profits. Write for the Deming Schedule now.

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JANUARY 15, 1916



IT is with great sorrow that we announce to our readers the death on New Year's Day of our good friend, and theirs, Mr. T. B. Terry. For over twenty-five years Mr. Terry has contributed regularly to this paper, and "Terry's Talks" have been eagerly read by nearly every reader of The Practical Farmer. During his connection with this paper, Mr. Terry has written on a broad range of subjects, covering every phase of agriculture, and in addition has contributed a most valuable series of health talks through which a great many of our readers have profited in renewed good health.

Mr. Terry's death resulted from the recurrence of a malady which afflicted him twenty years ago, at which time his doctors told him that he could not recover, and expected his death in a very short time. In this emergency Mr. Terry exerted his indomitable will and courage; he studied his own case carefully and through a strict system of dieting, exercise, bathing, etc., he restored himself to perfect health; it was the knowledge and experience thus gained which Mr. Terry put into his health articles which have done so much good to readers of this paper. It was only when the weakening effect of advancing years joined hands with his old malady that he succumbed.

A host of our readers will join us in mourning for this wise and kindly gentleman whose highest aim always was to aid others and give them the benefit of the experience which he himself had gained through years of toil and a valiant fight against ill health.

Our Orchard Number

IN presenting this, our Orchard Number, we wish to thank our many friends who have contributed to it. The articles submitted were by far the best that have been offered for any of our orchard numbers, and our only regret is that space does not permit us to print every one. The contributions were so full of merit, and the subjects selected so practical that it was only after careful study that we awarded the prizes.

In the final analysis we awarded the first prize to Mr. Jager for his manuscript, "The Home Orchard." His article is of interest to every farmer and full of help to the professional fruit-grower as well. His experience will help others and his suggestions are practical.

Every reader will appreciate the human endeavor in Mrs. Hoffman's article, which we gave second prize. She shows very plainly what can be done where one has spunk and perseverance. Just how the old orchard was made to pay and how it is kept on a paying basis will be appreciated by every reader. The suggestions she offers are excellent and we believe that this article will be read carefully by every one.

Mr. Pike, in the third prize article, handles the subject of peach growing in a masterly manner. The details of peach growing are carefully given and an excellent selection of varieties is suggested. The hints on picking and packing are right to the point, and marketing is not overlooked.

"Growing Apples for Local or Special Markets" is a tip top article full of common sense and one that is needed to bring out the home market development idea. Mr. Sanger is working along right lines and hits the very root of the marketing question. Of the two, the growing of fruit is more simple than the successful marketing of it, which is a problem that must soon be solved. This article should set every fruit grower thinking carefully on the market question.

You have already noticed that our Horticultural Editor, Mr. C. A. McCue, started his series of articles on spraying problems in our issue of Jan. 1st, and for several issues will discuss this interesting and important subject. Fruit growing is one of the principle branches of farming and we are pleased to see so much interest evidenced.

Two More Special Numbers

WE want to remind our readers that our issue of Feb. 15th will be largely devoted to the subject of Poultry, and our issue of March 1st to the Garden and Truck Growing.

In our issue of Dec. 15th, page 193, we gave particulars, list of prizes, etc., for our Poultry Number, and in the issue of Jan. 1st, page 4, an announcement of the Garden and Truck Number, together with a list of prizes, will be found.

Much interest is being evidenced in our special numbers and we want you to write of your experience. Tell just what you have done, both successes and failures; it will help you, and others, too. Send your articles in at once.

Progress of Prohibition

AN effective answer to the charge made by the liquor interests that prohibition does not prohibit is contained in the report of the Commissioner of Internal Revenue recently submitted to Congress. This report shows that during the fiscal year ending June 1, 1915, there were 42,477,492 gallons less liquor manufactured in the U. S. than during the preceding year. Production of fermented beverages, such as beer, showed a decrease of 6,381,263 barrels from the year previous.

These figures show conclusively that the death knell of alcohol has been sounded and that our people are beginning to realize the grave dangers to our boys that lurk in the saloons and drinking places.

It is most interesting to note that on January 1st the states of Colorado, Iowa, Washington, Oregon, Idaho, Arkansas and South Carolina joined the ranks of the Prohibitionists. With Virginia, where prohibition becomes effective on November 1, 1916, nineteen states will be in the "dry" column. Five other states, Nebraska, California, Michigan, South Dakota, Vermont and the territory of Alaska will vote on state-wide prohibition this year.

Powerful interests are at work trying to block the temperance cause at every turn, but they are losing

out. Right is bound to predominate, and education will soon drive rum from our shores.

The argument that the liquor men use so frequently is that there is loss of internal revenue to the government through the decrease in the consumption of liquor. True, there may be a loss of revenue, but there will be more than a corresponding saving in other ways. After all, the lives of our children are worth more than taxes, and character is not to be measured in dollars and cents.

In Russia, where a ban has been put on the manufacture and sale of vodka, the national alcoholic drink, the savings have increased from 300 to 500 per cent. over previous years. These savings are largely among the peasant class, who were largely addicted to the use of vodka. This saving in spite of the fierce war that is being waged, is nothing short of marvelous.

It is our imperative duty as citizens to help those that are weaker than ourselves. We may be able to withstand temptation and let liquor alone, but as there are so many that can not, we must use our efforts and influence to banish it entirely from the face of our fair country.

Something Worth Watching

THIS year the state of Wisconsin enters on an experiment with her male convicts which promises, at least, to be interesting. The law provides for letting out the convict labor to the highest bidder for work on the highways of the state. The bidding is to be done by the authorities of the several counties, the work to be done on the highways of the counties to which the labor is allotted. The state authorities, by its agents, will have direct control of the convicts while they are at work, and be responsible for their proper treatment by those employing them.

Convict labor has been let out to private contractors in different states, and, as a rule, with unsatisfactory results as far as the effect on the unwilling wards of the state was concerned. In some instances the system was a disgrace to the state which benefited by it, and a stench in the nostrils of all humane and law-abiding citizens. The weak point in this private contract system was that the convicts were under the absolute control of the contractors and their hired overseers, who had no other object than to get the most work at the least expense out of the men and boys who were committed to their charge, without regard to either their moral or physical well being.

The Wisconsin experiment will put the convicts under the direct control of the prison authorities, the same as they would be within the prison walls.

This convict labor will be put where it will do the most good, and where it will come in the least harmful competition with free, full paid labor. Heretofore the inmates of the Wisconsin State Prison have been employed in the manufacture of binding twine, shoes, furniture and other articles of domestic production, which have come into direct competition with the better paid labor of free men and women, to the detriment of the latter. Hereafter, if the experiment is a success, this labor will be employed for several months in the year on work for which it is at times difficult to get other labor in required abundance, and at a less cost. Good roads are coming more and more to be recognized as one of the prime necessities in profitable and up-to-date farming. Prison labor, under the Wisconsin idea, ought to be able to make them.

And if this Wisconsin idea should be a success, prison labor might also be profitably used in helping to save the crops, and be a direct help to many a farmer in a tight place during the harvest months.

Bulletin Helps for Farmers

"Alfalfa in Delaware," by A. E. Grantham (who, as our readers know, is editor of our Soils and Field Crops Dept.), is the title of Bulletin No. 110, issued by the Delaware College Experiment Station at Newark, Del. This bulletin covers every phase of alfalfa growing in this section in a most comprehensive manner and should be studied by every farmer. It is practical, authentic and up to the minute.

Stock raisers and veterinarians generally will be interested in Bulletin No. 370, issued by the U. S. Dept. of Agriculture, Washington, D. C., on "Experiments in Vaccination Against Anthrax."

Those interested in the methods of pruning and training used in this country will find them illustrated and described in Farmers' Bulletin No. 471, entitled, "Grape Propagation, Pruning and Training," Department of Agriculture, Washington, D. C.

Fruit + Stick-to-it-iveness = Success

SECOND PRIZE ARTICLE

By MRS. CAL HOFFMAN

After spending our first two years of married life in a little, poorly built house and a bit of garden, and paying \$50 a year rent, both husband and I toiling for a bare existence, we concluded that if we ever wanted to enjoy any of the real comforts of life we must steer into another channel than he being a stationary engineer. So suiting the act to the conclusion, we purchased our present place of habitation, consisting of a house and barn sadly in need of repair, and 18 acres of land. We started with practically nothing, so the judgment almost exceeded all our earthly possessions. The only things I could

fruit to perfection both in size and color. We keep a horse, cow, 3 to 5 hogs and 100 chickens, and all the available manure we put to the trees and buy commercial fertilizer for the crops. The first year we picked 135 bushels of fairly good apples, and each succeeding year they have improved in quantity and quality. This fall we picked over 800 bushels. Our winter apples we sell to dealers who grade and pack them themselves; we, of course, haul them to a nearby shipping point. Our summer and fall varieties we grade carefully, barrel them and ship to Philadelphia to a commission man, always realizing



What Fruit Helped to Build. The Home When It Was Bought and as It Is Now

see in our favor were health and grit. The land was so robbed and starved that weeds were afraid to start. The first thing husband did was to go into the orchard (containing about 100 bushy old apple trees, each one representing a thicket) with an ax, saw and pruning shears. Quite a few trees were dead; these he cut into firewood; some the tops were nearly dead but the trunks were good—these he "dehorned." The balance were thinned and the suckers pruned out. As the orchard had never been sprayed the trees were crusty with San Jose scale. Our courage almost failed us, for our funds, which were scarce to begin with, were now exhausted and nothing in sight with which to purchase a spray outfit. But a generous neighbor who had previously tasted of poverty's cup, came to our rescue and loaned us his outfit. We purchased lime-sulphur by giving a note, and I pumped for husband to spray, and we literally soaked those old trees.

I much prefer lime-sulphur to oil sprays. First, lime-sulphur is death to fungous diseases. Second, it never injures trees, while I have known trees to die from the excessive use of oils. In blossom time we sprayed twice with arsenate of lead for codling moth. The orchard had been in sod, I believe, for 40 years. Husband plowed this down and planted to corn, and since then he rotates crops, not expecting much crop, of course, but the tillage brings the

good prices. In the meantime we set the entire place to peach and apple trees. While these trees are small we plant grain crops between and some truck, such as strawberries, raspberries, dewberries, asparagus, cantaloupes and garden truck. Marketing these through the summer brings excellent returns until the trees begin to bear. Of course, we do not have manure for all the trees and then we use a small amount of nitrate for the apple, and potash for the peach trees. The apple trees are kept well thinned and headed fairly low. Thus admitting sunlight and air so essential to perfect fruit and the low head makes easier picking. As soon as the fruit on both apple and peach trees are the size of a walnut we thin them, picking off all defective and surplus fruit. All the faulty culls the dealers discard we haul to a nearby canning house, getting a fair price for them; by so doing we get rid of these worthless apples and many moths and insects. We have brought the land to a good state of fertility by liming, fertilizing and rotating crops. In the way of improvements we have built a wagon shed, chicken house, wood-shed, spring house, brooder house, hog pen and auto shed, have a gasoline engine with which to spray and wash, and improved our house from four to nine rooms, installing a telephone, bath room and furnace, purchased a piano for the children and are living comfortably. Pennsylvania.

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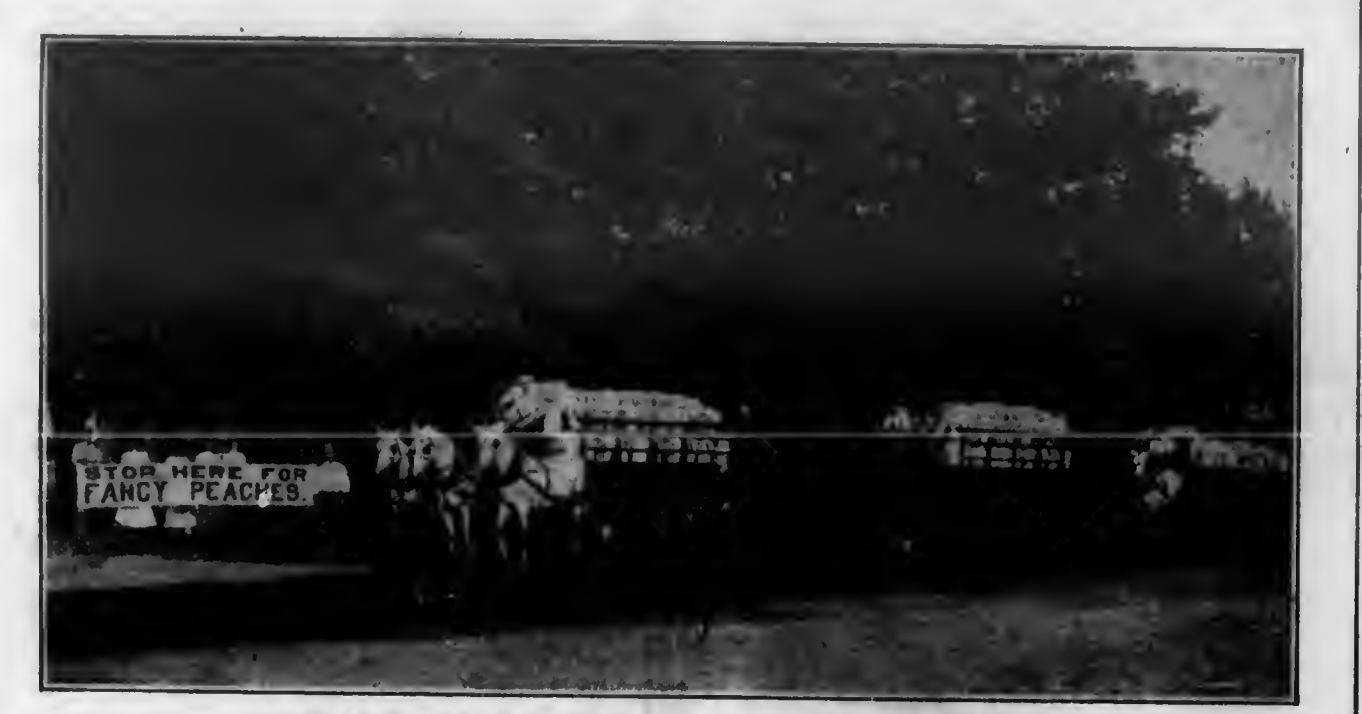


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Peach Growing in the South Mountain Fruit Belt

I will first give an account of our methods and end by giving a little history of my experience on a small farm. Fruit growing has become a matter of very much study if you wish to make a success of it. The most essential things to consider are to select proper location, right varieties, cultivation or mulch, pruning, thinning, spraying and finally marketing the fruit. With us we prefer well drained ground with a northern or western exposure, as eastern or southern exposures cause the buds to move too early in the spring, and therefore subjects them to late spring freezing. We prefer clean cultivation on account of having some very dry seasons and we can hold the moisture better by cultivation than any other way, and the moisture is very important for fine fruit, as fruit contains a very large percentage of water.



Next to consider is the fertility of the soil. The soil should be well fertilized, for to grow trees and a crop of fruit at the same time is a very severe strain on the soil, and as the old saying goes, you can't expect to take a crop off every year and put nothing on. We have found that a 2-6-10 mixture gives us the best results, using 400 to 500 pounds to the acre each year, about June 1st. Great care should also be taken in planting the trees, for trees not properly planted will be stunted from the start and that is just what you want to avoid, for the time to grow your tree is before it begins bearing. When the tree comes from the nursery all bruised roots should be pruned off and tops pruned to a switch from 18 inches to 2 feet high. The holes should be made large enough so that all roots will go in without crowding. Use pick and shovel or dynamite, or if necessary use the three. By all means don't crowd the roots. We are pestered with the borer here, and find the only safe and sure way to destroy these pests is to dig the earth away from the trunk of the tree and dig the worms out with a knife. This should be done at least once each year, but better twice, spring and fall. This is the worst enemy of our fruit trees, as more are injured by these than all other troubles combined, including yellows.

Pruning is another essential, especially with peaches, as the peach tree, I think, will stand more pruning without injury than any other tree. Therefore we prune heavily each season. There is no set rule for pruning, as nearly every one prunes according to his own ideas, it depending entirely on what results you wish. If trees are not thoroughly pruned there is a lot of thinning to do, which is a tremendous job, so it is better to prune heavily (which can be done during the winter months), and

have less thinning to do in the spring and summer when you are so busy. In thinning we aim to have the fruit distributed not less than 3 inches apart. Now we come to spraying, which is very important. If spraying is not done thoroughly it may as well not be done at all, as it would be time and money wasted. Lime-sulphur is the best spray material, and should be used while the trees are dormant. But to derive the greatest benefit it should be done late in the spring, just so you finish before the buds begin to open. By spraying at this time you not only destroy the scale, but also destroy the leaf curl, which is a fungus that comes from spores in the ground early in the spring and settles

on the leaf buds when they are shooting, which causes the leaves to curl and blister. These leaves fall off, and I have seen it so bad in a wet spring that the fruit came off with the leaves, thus losing the fruit crop for that season.

The proper varieties to plant is not so easy to decide, as some will do fine in one section and be a failure in another. Also the color, whether to be red or yellow, as the demand varies from year to year, as, for instance, here in our markets the reds always sold at a premium until this year, when every one wanted yellows, and lots of the reds or whites had to go to waste in the orchard. But as this was the largest crop ever known in the U. S., we were glad that more were not wasted. There were as many as 50 cars loaded at our station (Smithsburg) alone. But to return to varieties, we find the following, as named, will give a continuous crop of first-class fruit from Aug. 1st to Oct. 15th: Carman, Hiley, Champion, Belle of Georgia, Elberta, Hale, Francis, Smock, Fox Seedling, Piquette's Late, Salsway, Klondyke and Bilyeu. These are all old reliable sorts and can be depended on.

We pick all our fruit by hand, haul it to the packing house, where we have a grading machine which makes four grades of them, and this has proved very satisfactory, as it grades the fruit more uniformly than it can be done by hand and does the work so much quicker and saves many extra hands, which are hard to get during a large fruit crop, thus helping to solve the labor problem. By grading in this way you can guarantee every package to be uniform throughout. The half bushel, or Delaware, basket has been the preference here, but the last year or two have made some changes, and I believe in the near future the bushel basket will be the leading package for peaches.

During the first two years after planting trees I have used melons, corn, raspberries, and now have one orchard with currants planted between the

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trees. All have proved profitable and did not hinder the growth of the trees. The berries and currants, of course, I leave in for some years.

As to marketing, we have a fruit growers' exchange which gets wires each morning from the leading cities and then places the fruit to the best advantage. Quite a lot of growers sell their fruit at the station, while others

ship to commission merchants. This past season we were compelled to resort to all methods in order to place our fruit. But in average seasons there is no trouble, for there are generally enough buyers here to handle the fruit. The principal thing is to endeavor to grow all No. 1 fruit and you can always find a market for such.

Maryland.

FOURTH PRIZE ARTICLE

By WM. E. SANGER

Apples for Local or Special Markets

There are two distinct types of effort in commercial fruit growing. One is the growing on a large scale of standardized varieties for the open general market. The other is the growing of special varieties and qualities of fruit in catering to the demands of a special or personal market or class of trade. Along the former line of effort the American fruit grower has reached a high degree of attainment; but apparently the matter of growing of fruit for a local or special market has, in a large measure, escaped his attention, and, therefore, I am led to believe that there are many communities throughout the country which offer unworked fields of opportunity along this line. In support of this thought I would mention that I read in a fruit paper that in the great fruit center of New York the local market is often neglected, and that it is sometimes difficult to buy real good apples there in retail quantities. If such could be true there, how much more true in country towns and communities away from the centers of production and distribution. It remains for the man to discover what kinds and varieties of fruit can be successfully produced in his soil and climate, and also which of these will best suit his conditions of market. And by beginning in a small way and putting on the market a choice grade of fruit in an attractive and absolutely honest package, he may be surprised at the demand that may be developed or worked up in his local or nearby markets. This idea is especially impressed upon my mind by our own experience and observation. We are located in Talbot Co., on the Eastern Shore of Maryland. In this and adjoining counties very little attention has been paid to the growing of apples in the past, especially winter apples, and on very few farms has there been produced a regular supply for the use of the family, and only in very recent years has it become generally recognized that good keeping winter apples could be grown here. On most farms there are a few old trees, usually an ill-assorted lot of summer varieties.

Twenty-eight years ago, when the father of the writer located, with his family, on the farm where we now live, he was informed by our neighbors that this was no place to grow apples; that it was no apple country, and that it would be a waste of good land to plant it to apples. Some informed him, too, that one could not give away good apples in our nearby town. Notwithstanding these discouraging remarks, father planted out a block of 75 apple trees, assorted mainly with a view to provide a liberal supply for family use in succession from early to late, the selection being left largely to the tree agent, who was a resident here! Six or seven years later he planted 50 more trees, mostly of winter varieties. He naturally took great delight in caring for trees (and he still does and so do his boys), and with painstaking care and attention to the little details he aimed to follow the most

approved methods of tillage and pruning. Then a little later the boys began to study the subject of spraying and we aimed to adopt the most approved practices along this line. By thus giving careful attention to all of these absolute essentials to successful apple production, the result has been that with some of the varieties planted, the fruit produced was of such quality as to simply astonish some of the old residents of this section. At first little interest was shown in apples in the market here, but after choice Grimes' Golden and Winesap were before the people for a while they began to want to eat apples, and the consumption and demand for such apples have increased very rapidly in nearby towns. Even many farmers come to buy during the winter season. And were we to make greater efforts in selling and in attempting to reach out and impress more people with the value of good apples, not only by word, but also by their sampling such fruit themselves, I believe the consumption of apples can be further increased very greatly in this vicinity, at such prices as will afford good net returns. A branch of the business which seems to offer opportunity for expansion is that of filling orders for barrel and box lots to be shipped to the cities and elsewhere. We have corrugated strawboard boxes holding a peck which we use in sending apples by parcel post. This trade has started up mostly through our customers here ordering a package of apples to be sent as a present to their friends, who in turn tell other friends of the fruit. To illustrate how this trade may grow, a little incident may be of interest. Last winter a gentleman from Iowa, while visiting a friend, one of our customers here, after learning of the quality of the Stayman as grown here, ordered a bushel boxful shipped to the Mayor of Philadelphia, who afterward ordered of his own accord. And this season we had the pleasure of filling an order from the same gentleman, for two boxes for the Mayor, and a barrel shipped to himself and a barrel to a friend of his, both to Iowa, where they usually get their supply of apples from the Northwest. Such trade as this calls for fancy fruit, and for such it will pay a special price. For the order just named we received \$2 per bushel box and \$4.50 per barrel f. o. b. our station, at harvest time.

To many men whose aspirations are to grow fruit on a large scale and ship away to the general market in wholesale quantities, the above methods of marketing, with all the bother of details, may appear beneath their notice. However, I have the conviction that, as I before stated, there are many localities that offer an opening for such an enterprise, not alone in apples, but to include the various fruits that are suited to the climate and are wanted in the markets of a given locality. And I believe, to the man who will have the patience to properly work it up, it offers satisfactory returns. It is with the purpose of emphasizing this idea, with the

Friend Sprayer Exhibit at Panama Exposition, where this Company was awarded the Medal of Honor (High award) on Power Sprayers, Hand Sprayers, Tank Filters, Shut Offs and Nozzles.

The first Gasoline Power Sprayer was a "Friend" and year after year every Friend outfit is better because the suggestions of its users are built into each new model whenever their actual experience shows that a part can be improved or simplified. Many years ago the Friend motor and pump by a unique construction were combined into a unit. Again, all parts for all outfits are built in our factory, each specially designed for its work. These features together with standardization of all working parts—the constant effort to better the quality, efficiency and strength of each outfit make

Further, the outfit is not cut and dried—you do not have to bring your requirements up to the machine but each outfit can be modified to bring it to your individual requirements. It will still be a Friend with these features. Neat mounting—light weight—easy drawing—short turning—direct propeller agitator—combined unit of motor and pump—quickly accessible, adjustable and detachable parts—unique pressure regulator—complete—high grade—guaranteed.

Individual Friend Sprayers for Every Crop That Grows

The Kentucky Tobacco Products Company in order to make satisfactory experiments needed a sprayer that would throw a very fine spray with great force. They asked us to supply the model and we satisfied them—Professor Fitch of the State College of Ames, Iowa, needed a machine for spraying melons—we built a special machine that he says worked wonders. The Hop Growers in the Cooperstown district put their problems up to the Friend and report the sprayer we built them did the work. We cite these instances to show you that it will pay you to submit your spraying problems to us.

Mark the coupon—send for the Friend catalog—tell us what work you want a sprayer to do and let our expert help you buy the most economical model for you to use. There's a Friend for every man who sprays at a price he can afford to pay. Get in touch with us today. Send the coupon. Get the catalog. Give us enough information so we can advise you how to buy economically.

Friend King

For extensive work where it is necessary to carry a large amount of spray material into the orchard—large wheels, wide tires—2 horse draft, express tank of 200-250 gal. capacity, propeller agitator with four bolts every part accessible—pressure held and relieved by remarkable regulator—step platform—steel track—narrow bed for short turning—Western tread enables use in potato fields—Motor pump supplied with suction hose so hose can be removed and pump cleaned. Recommended for use in orchards of ten acres or more—delivered complete with whitewash, neck yoke, tower and two hose lines.

"I have been busy spraying with two 'Friend' Kings for over a week in our orchards—the more they run the better they work. Our neighbor's old sprayer gave out on him and I am sending him over a 'Friend' to finish the job. The 'Friend' is a wonder and I am using only two to an acre where I have been using four single nozzles before. They put it through a tree with from 200 lbs. to 300 lbs. pressure." H. C. GOODWIN, Avon, Va.

Friend Lightest King

LIGHTEST KING is the SMALLEST, LARGEST, CAPACITY LIGHT weight, HIGH pressure Power Sprayer ever produced, very popular for combination field and orchard work. The tank holds 100 or 150 gal., the motor pump has two hose line capacity at high pressure. The tank is LIGHT, light, DURABLE, flexible with sheet. The machine is equipped for one or two horses, equipped with one or two hose lines. A tower is also furnished where desired. Also field attachment for spraying potatoes and all field crops. The agitator propeller type, direct connected, no belt drive chains. Everything is the very latest and BEST, even the pressure regulator. The tank is CYLINDRICAL, LIGHT and has a very low center of gravity and cannot overturn, the equipment is complete, everything ready for service.

"The Lightest King works fine and does the work well; we have enough power to use four times of hose if necessary." So write Fay Brothers of Cooperstown, N. Y., on July 14, 1915, and again on

Friend Queen

Queen is the low down, cut-under model, underslung to called. It has all the capacity that KING has in every way. Diving to the UNIQUE construction, its close coupling, the large wheels and wide tires it is very easy drawing. The fifth wheel is flexible, permitting the machine to go over uneven ground without any probable misalignment of the bed or working parts. The machine was designed many years ago. Everything about it is thoroughly tried—nothing experimental whatever. The tank is CYLINDRICAL, LIGHT and has a very low center of gravity and cannot overturn, the equipment is complete, everything ready for service.

"I know my Queen has pumped more 'stuff' than any other sprayer on earth and it still runs fine." E. E. TOUTILLLOTTE, Haverhill, Mass.

Friend Motor-Pump

The motor is an all type—perfectly balanced—four cycle—Schneider carburetor—hand control—jump ignition—adjustable system of lubrication—perfect oiling system throughout. One roller lubricates the entire machine. The pump is built to the motor—motor and pump frame all one. The pump is plunger type, double acting, quickly detachable valve and seat, quickly accessible and adjustable packing and so on.

"I like your pumps the best of all—I think them so much more durable and less apt to get out of order. I also like your Queen style—can get around the orchard in as little space." Pomona, Calif.

Mark the Coupon—Let us furnish the right outfit for you to use

FRIEND MFG. COMPANY, 39 East Avenue, Gasport, N. Y.

Lightest King

Friend "Queen"

Coupon

Name.....

Address.....

() Power Sprayer () Large () Small

() Hand Sprayer () Large () Small

() Complete () Above Trucks

() Accessories



BIG, SWEET BERRIES

the kind that melt in your mouth, come only from plants that are started right. We know how to grow such plants, and in

OUR 1916 CATALOGUE

we tell you how to grow the Strawberries. We list only the varieties that are reliable, and that have proved productive and profitable in all Strawberry-growing sections. A select list of Apple and Peach trees is also included. Write today for a free copy.

J. W. Jones & Son
Box F, Allen, Maryland



MAULE'S SEED BOOK

for 1916 Contains all the best things in Seeds. Bulbs, Plants, 176 pages, over 800 pictures, with Maule's Aster, and Pan-acea in color. Write today—We send it Free

MAULE'S SEEDS

—Once grown, always grown. Half a million successful gardeners plant them every year. Wm. HENRY MAULE, Inc., 2127 Arch Street, Philadelphia, Pa. Send 10c, mention this paper, and we will enclose in the catalogue a packet of the above GIANT Fungus.

Livingston's SEEDS

Make better gardens. All are tested for purity and vitality. Have been giving satisfaction for over 50 years. Be sure and try our

5 FINE VEGETABLES 10c One inch packet each of Bean, Beet, Lettuce, Radish and Tomato—top quality. All are heavy yielding and exceptionally fine in quality. Try them.

Large CATALOG FREE

Gives helpful cultural directions and offers strictly high-grade seeds at fair prices. Write for your free copy today.

The Livingston Seed Co., 148 High St., Columbus, Ohio

STOKES SEED CORN

yields more per acre

The new 1916 Stokes Seed Catalog tells about the Stokes method which brings to you only "redesignated" seeds. It shows the sure way to get better crops. Write for a copy today. Stokes Seed Corn is grown in New Jersey under ideal conditions and is the pick of the best ears from the healthiest plants. Seed bright and of high germination.

100-Day Bristol, \$2.25 bus.; 6 bus. at \$2. Stokes Earls Ensign, \$2 bus.; 6 bus. at \$1.75 Improved Leaming, \$2 bus.; 6 bus. at \$1.75 Shipped by freight. Write for quantity prices. No extra charge for containers.

Stokes Seed Farm Co., Inc., Dept. 12, Morrisville, N. J.

ALSIKE \$5.00

AND TIMOTHY

Investigate—Best and Cheapest Seeding Known. Alsike Clover and Timothy mixed. Fully 1-3 mile, a big bargain. Greatest hay and pasture combination grown. Write for Free Sample and 100 page catalog and circulars describing this wonderful grass mixture. Be sure you can now and reliably cheap. We handle only best tested reseeded seed guaranteed. Write before advance.

A. A. BERRY SEED CO., Box 229, Clintonville, Iowa

BUY FARM SEED AT WHOLESALE

Timothy, Alfalfa, Clover, Grasses, Cow Peas, Corn, Seed Irish and Sweet Potatoes, Onion Sets, etc.

C. N. ROBINSON & BRO., Dept. 157, Baltimore, Md.

hope that it might be suggestive and helpful to others, that I am telling this story.

Our soil is medium to light sandy loam. This is a tidalwater region, land being level, with an altitude of only about 60 feet above sea level. Therefore many of the leading varieties of the North, and some that succeed in the higher altitudes of this state, are failures here. It is a matter of great importance—or perhaps I should say of first importance—to select the right varieties for the section, and also it is a great mistake to have too many varieties. However, more are required for a local market than when growing for the general market, and for the local market there should be enough varieties to afford a succession and some selection throughout the season. The original block of 125 trees above mentioned has been rather interesting as a test orchard. The list of varieties planted was about as follows: Sweet Bough, Early Strawberry, Maiden's Blush, Keswick Codling, Fall Rambo, Ben Davis, Paradise, Winter Sweet, Smith Cider, Winesap, Grimes' Golden, York Imperial, Fallwater, Red Astrachan, White Pippin, Fall Pippin, Fall Strawberry, Penckock, Holland Winter, Blenheim, Carolina Red June, Early Ripe, Early Harvest, Virginia Beauty, Carlough, Shockley, Royal Lambert, Rome Beauty and Stayman, which last was topworked on to a lot of the most undesirable varieties. About one-third of the trees were summer varieties, for which there is little sale here locally. Our interest is in winter fruit. After our experience with all these varieties, my conclusion is that the value of this orchard to us would be at least doubled provided it were made up of a selection somewhat as follows: Stayman, Grimes, Winesap, Paragon or M. B. Twig, York, Rome and White Pippin, with one tree each of the following for family use: Yellow Transparent, Red Astrachan, Early Strawberry, Williams' Early Red, Gravenstein and Maryland Maiden Blush. Six years ago we set out a 10-acre orchard. It was laid out with a 2-horse plow, rows 34 feet 8 inches apart one way and crossed off 20 feet apart the other way. In planting each alternate tree in the row is put in as a filler and the fillers in one row are opposite the permanent trees in the next row. This is known as the triangular or hexagonal plan of planting, and with distances given the permanent trees are 40 feet apart each way, with 31 trees to the acre, as against 27 trees by the square method, 40x40 feet. This planting consists of Stayman, Paragon, Winesap, York and Nero for permanent trees, with Grimes' and Jonathan for fillers. If we were now setting this lot over I would leave out the Jonathan, and most probably Nero, and only half as many York as of other varieties. The greatest weakness of the Jonathan is that it is so very susceptible to the blight; York also is badly injured by blight. The Stayman, without doubt, heads the list for value. However, it does not keep late in our home storage, and we need the Winesap and Paragon to continue the season. The Grimes' has made the greatest fame among consumers here, but its season for keeping is very limited. The White Pippin is of similar quality and is of value for us to extend the season into late winter.

We have always followed clean culture, plowing as early in spring as possible, continuing regular cultivation until in July, when we stop working, at that time seeding with crimson clover for a cover crop. In the young orchard we have followed inter-cropping with potatoes and tomatoes, following each

Don't Pay Freight on Water

Spray with Niagara Soluble Sulphur Compound in Powder Form

FIVE YEARS of actual practical experience in every fruit-growing section, in every State in the Union, has proven that this wonderful Spray Material, which dissolves instantly in cold or hot water, is

Efficient, Economical, Practical, Convenient

It not only enables you to produce clean, top-quality fruit, but at the same time reduces your spray bills 25 per cent or more.

Note This Comparison

100-lb. Drum of Niagara Soluble Sulphur Compound makes more dilute spray than a 600-lb. barrel of Lime and Sulphur Solution. At the same time you have less to haul and handle. No loss from leakage—No crystallization—No spoilage, as Niagara Soluble Sulphur Compound keeps indefinitely in any climate.

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Write us at once for booklets that tell how to spray and show you how you can save 25 per cent or more on your spray material bills.

IT WILL PAY YOU to get in line with Soluble Sulphur users.—They are the men who are making money in the fruit-growing business.

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Manufacturers of everything for Spraying purposes Machinery and Materials.

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Spraying Pays

SAVES your crop from loss, helps tree and plant to produce better and larger crops, prevents spread of disease, insures a longer life for trees and a longer growing time for vines each year. Blight hit potatoes in many states in 1915—many million bushels lost. Spraying would have saved them.

IRON AGE Sprayers

Include bucket, barrel, power and potato sprayers in many sizes and variety of equipment to suit each man's needs. We want to show you what each one is, how they are made and what they will do. Ask your dealer to show you these tools and write us for booklet describing all of them fully. We also have a spraying guide which we are glad to send.

Bateman Mfg. Company, Box 14, Grenloch, N. J.

Also Potato Machinery, Garden Tools, Fertilizer Distributors, etc.

One Barrel of "Scalecide" Will Spray as many Trees as Three Barrels of Lime Sulphur.

"Scalecide" has greater invigorating effect on your orchard—kills more scale, eggs and larvae of insects with half the labor to apply. We can back up this statement with facts concerning the Good Results from Using "SCALECIDE".

Send for our illustrated booklet—"Proof of The Pudding". Tells how "Scalecide" will positively destroy the Java and Cottony Maple Scale, Pear Psylla, Leaf Roller, etc., without injury to the trees. Write today for this FREE book and also our booklet—"Spraying Simplified". Learn the dollars and cents value of "Scalecide, The Tree Saver".

Our Service Department can furnish everything you need for the orchard at prices which save you money. Tell us your needs.

B. G. PRATT CO., Mfg. Chemists, Dept. R, 50 Church St., New York

Use NATCO Drain Tile—Last Forever

Farm drainage needs durable tile. Our drain tile are made of best Ohio clay, thoroughly hard burned. Don't have to dig 'em up every year. They are made to last. They are made to last. They are made to last.

Also manufacturers of the famous NATCO IMPERISH-ABLE SILEO. Natco Building Tile and Natco Sewer Pipe.

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FRUIT TREES SMALL FRUITS SHRUBS ROSES

IN LARGE OR SMALL LOTS AT GROWER'S PRICES, direct from nursery to planter. Safe delivery, personal attention and satisfaction guaranteed. APPLE TREES TOP BUDDED TO FIVE VARIETIES—just what's needed for the home garden. Buy at rock-bottom prices of the grower and save disappoint-ment of fruiting time. Get our illustrated catalog, mailed free upon request.

WELLS WHOLESALE NURSERIES, 61 Wellesley Avenue, Danvers, N. Y.

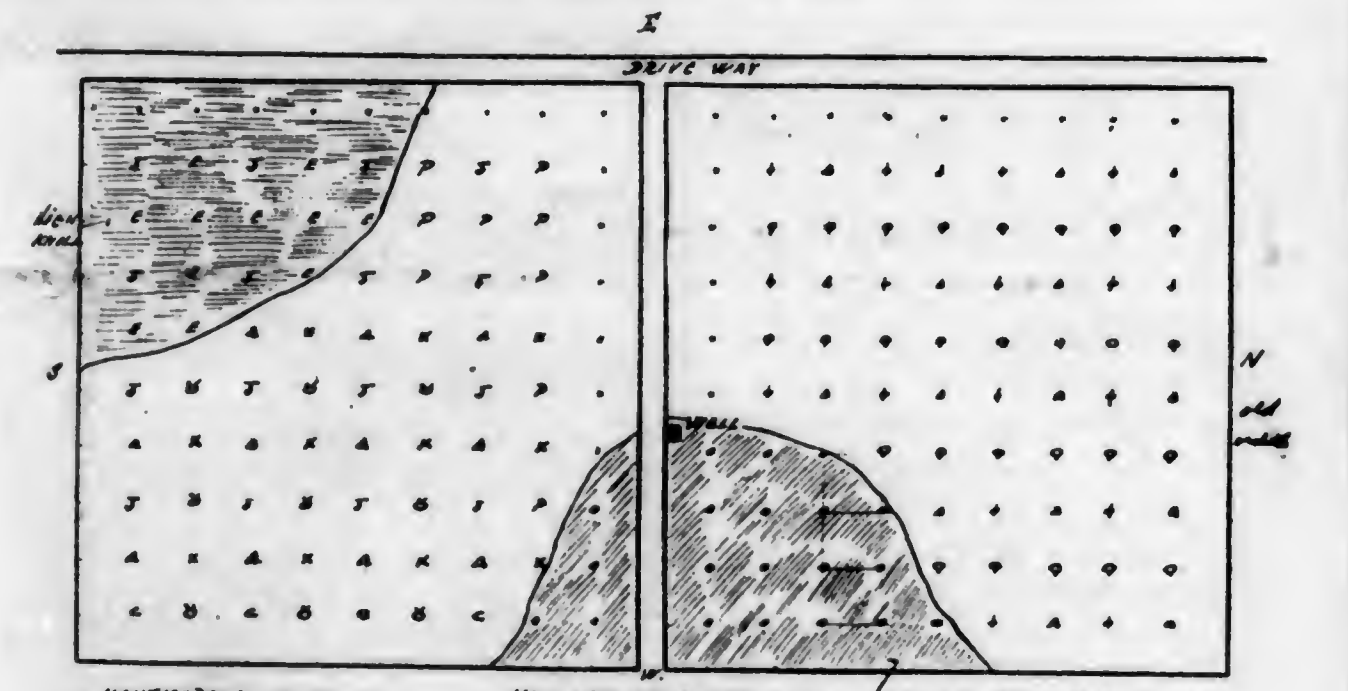
crop with the seeding of crimson clover.

However, the past season the clover was omitted, because the growth of trees is becoming too rapid and succulent and they suffered exceedingly during the general outbreak of blight last season. Also the formation of fruit buds is, we believe, being retarded by this growthy condition of the tree. Therefore we must adopt measures to check and harden the growth of the trees. It may be necessary not only to discontinue adding nitrogen, but also to lessen the moisture supply, either by less cultivation or by putting in some crop that will draw heavily upon it. In the lot of the old bearing trees we have been using the crimson clover cover every year for six or eight years without noticing any injurious effects on fruit or trees.

We spray every spring just before the buds open, with winter strength lime-sulphur, 1 gallon of the concentrated solution to 9 gallons of water, and then concern ourselves no further about scale. Within the first week after dropping of blossom petals we give the calyx spray, the most important of all applications for the immediate crop of fruit, and the work should be done most thoroughly. With high pressure and a nozzle giving a heavy driving spray, and with the operator working from the tower of the machine, directing the spray downward and inward toward the tree, the effort should be to reach the calyx cavity of all the little fruits with the solution. We use for this applica-

tion 2 pounds of arsenate of lead and 5 quarts of concentrated lime-sulphur to 50 gallons of water. This spray is repeated in two weeks. About July first we spray again, using 2 pounds arsenate of lead with 3-4-50 formula of Bordeaux mixture. The purpose of this application is to control the second or late brood of codling moth and the late fungi, such as sooty fungus* and fly speck, which injure the fruit here very much some seasons, the past season remarkably so. We are troubled considerably with bitter rot, especially on Fallwater, Fall Pippin, Grimes', Ben Davis and White Pippin. Except in the case of the Fallwater we have had a fair degree of success in controlling it by use of Bordeaux mixture, 4-5-50 formula. On these susceptible varieties the first application is made about June 25th and repeated at intervals of two weeks until four applications are made, usually. We have a duplex sprayer, and for general work use an angle nozzle and work with a pressure of about 200 pounds. For the calyx spray, or when spraying against the wind, we use a "drive" angle nozzle with a pressure of 250 pounds.

To keep our winter fruit we store in an insulated, frost-proof room, built in our implement and carriage house. Up until freezing weather comes the temperature of this room is kept as low as possible, by throwing open a door at night in each of two opposite sides, and closing tightly through the day. Maryland.



The Home Orchard

(Concluded from page 23)

and Napoleon are the favorites. A few old residents are still asking for the old Black Oxheart, a deep black, tender species.

In peaches I depend on Elberta and Late Crawford. They fill the bill.

The York State Prune, a selected prune put out by the Danville nurserymen, is equal to the French prune and harder. It equals the French prune in flavor and is almost as large. One can sell them as German or French prunes, depending on the demand, as they are produced from sports from such. Another plum that should not be forgotten is the Abundance, rightly named. It is a popular variety. For jams and preserving the Shropshire Damson stands without an equal. The supply of this improved plum over the common Damson for canning has never been able to fill the demand here.

The Orange quince ends the list of fruit trees, as I find them right for the paying home orchard.

By planting the trees with a good windbreak against the north and west, such as an older orchard or a woodlot will give, the danger of storm damage is less and the surplus fruit can be pick-

ed and sold, instead of making hog feed and waste.

The old rule often mentioned by my father, that great blocks of any one kind of fruit will give more work and worry than mixed orchards, holds as good today as it did then. Insects, diseases and reduced crops are apt to follow the large acreage of any one variety, notwithstanding the easier way of spraying and caring for them. The mixed orchard, while it does prove perplexing to spray at the beginning, is, after all, nature's own choice. We do not find naturally grown woodlots of but one kind of trees. All are more or less mixed, and in this mixing alone nature has set a check to ravishing diseases that might come. Bees work better and the sun is able to encourage more the mixed orchard, especially if we have used our head piece to aid nature, and picked the soil as the trees prefer it.

If every tree is an outside tree we know it will produce the best results, and give a crop practically every year. The mixed home orchard is but a step removed from this finding. The good caretaker of such an orchard will discover that he can depend on it for steady annual returns, hence my advice, plant the mixed home orchard, one like the old folks had, the kind that always bore.



Do You Raise Corn For 12c a Bushel

Do you believe that this can be done? Do you average 100 bushels of corn per acre? If you were planning to raise 100 bushels of Corn per acre, at a cost of 12 cents per bushel, how far apart would you space your rows? How far apart would you space your hills in the row? How would you test your seed? When would you plant? How deep would you plant and how many kernels in each hill? How would you make sure of getting ahead of the crows? How much fertilizer would you use and how would you apply it?

We have prepared a book for practical farmers who are growing corn. All of these points and many more are fully covered. A careful reading will save you money in the future. If you will write and tell us how many acres of corn you expect to raise next season, we will send you one of these books, entitled

"Corn,"

The Foundation of Profitable Farming

E. Frank Coe Fertilizers

Manufactured only by

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What is the Deming Schedule?

The Deming Schedule is a spraying calendar 16x22 inches in size, listing all kinds of trees, the pests from which they suffer, and the best methods of destroying those pests. It helps you pick better profits from your orchards.

How can I get the Deming Schedule?

By writing The Deming Company, 132 Depot St., Salem, Ohio, manufacturers of knapsack, bucket, barrel, tank and power sprayers, with 35 years of experience in pump construction. Merely ask for their catalog and state the number of fruit trees on your land. The Schedule will be included free.

Is it worth my time?

Yes—for, as the Department of Agriculture will tell you, unless you spray intelligently with the best devices, you are not taking all the fruit you can grow to market. And you are not getting the top price for it. Wise spraying is a simple, sure road to bigger profits. Write for the Deming Schedule now.

Address The Deming Company, 132 Depot Street, Salem, Ohio.

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Barnes Sprayers lead the world for efficiency and lasting qualities. We make over 300 styles and sizes of pumps for all purposes.

People spraying on a large scale and wanting strong pressure find no equal to

Barnes Double Acting Barrel Pump

All working parts in contact with liquid are brass. Large air chamber enables one stroke of handle to sustain steady spray two minutes or over. Fitted with superior sprayer. This pump is everywhere a favorite with fruit growers. We guarantee satisfaction. Complete with 5-foot hose and Vermorel nozzle, \$10.00. With two leads hose and nozzle, \$12.00.

Barnes All-Brass Perfection Bucket Spray Pump

is the best made for small sprayer. Made of seamless brass, no threads, easily taken apart. Price (including 1-ft. rubber hose and nozzle) Only \$3.00. Buy your sprayer from sprayer specialists. Catalog free. Address

Barnes Manufacturing Company, Department 34 Mansfield, Ohio

TIMOTHY \$3.00

SAVE MONEY—Buy Direct from Growers. New released Iowa Green Timothy, free from noxious weeds. Guaranteed satisfactory if money refunded. Write today. 100-page catalog and Free Samples. Low prices on Clover and all grain seeds. Write for catalog. A. A. BERRY SEED CO., Box 229, Clintonville, Iowa

CLOVER: TIMOTHY \$5.00

Greatest Grass Seed Value Known—Investigate. Alsike Clover and Timothy mixed—the finest grain grown for hay and pasture. Cheapest seeding you can make, grows everywhere. You will save 1-3 on your grass seed bill by buying from us. Write for free sample, circular and list of Co-operative dealers. Write today. American Mutual Seed Co., Dept. 500, 524 and 526 E. Chicago, Illinois.

7 WONDER COWS of The World

And How They Made THEIR ASTONISHING RECORDS

You no doubt have heard of these seven "Wonder Cows." You may know them by name and by record. But, do you know how they made their astonishing records?

Everyone of these seven World's Champions was during its record-making, record-breaking official test.

In each instance SCHUMACHER FEED was a necessary part of the daily food. The owners of these cows of different breeds—at different farms and different times, were all in accord in selecting SCHUMACHER FEED as a part of the rations to be fed at these important tests. These men know feeds as well as breeds. They also know that the best feed must be fed to get the best results in the pail. It is also a significant fact that back of almost every World's Record of recent years stands SCHUMACHER FEED as the "unseen power" which sup-

plies the energy, stamina and continued health, so necessary to any cow which undergoes the strain of long continued milk production. Dairymen, you may not be trying for World's records, but you surely are anxious to get bigger yields, stronger constitutions, "every-day-on-the-job" health conditions, stronger calves, etc. If SCHUMACHER FEED will help do this and make better records for you. It has proved BEST for the best cows in the world—it will prove BEST FOR YOURS.

SCHUMACHER FEED

The Record-Making, Record-Breaking Feed of the World's Champions

SCHUMACHER FEED is a "wonder feed"—the most palatable feed obtainable. It is composed of kiln-dried, finely ground products of corn, oats, wheat and barley, the dairy cow to best advantage. When fed on the following plan, it has no equal.

This Feeding Plan Will Surprise You

Feed as the grain part of the ration, three sacks of SCHUMACHER FEED to one sack of gluten, oil meal, linseed meal, dried brewers' grains, dried distillers' grain, Malt Sprouts, Blue Ribbon Dairy Feed or any other high protein mixture. When cottonseed meal is used, feed four to five sacks of SCHUMACHER FEED to one of cottonseed meal.

As a suggestion of the amount to feed each cow, give one pound of the above mixture with all the roughage and ensilage the animal will consume, to every three or four pounds of milk that the animal yields.

THE
Quaker Oats
Company
CHICAGO, U. S. A.

Sophie 19th
of
Hood Farm

Here's What Her Owner Says:
"It will probably interest you to know that Sophie 19th of Hood Farm, 1891-1914, which makes her the Champion greatest dairy cow living or dead. We feed for dairy cows, and a strong factor in her success is SCHUMACHER FEED."
Very truly yours, Hood Farm

Schumacher Feed
"I am feeding SCHUMACHER FEED and her test record January 20, 1915, and stamps her the greatest dairy cow living or dead. SCHUMACHER FEED a splendid milk and butter production."
Dodge, Mgr., Lowell, Mass.

THE
Quaker Oats
Company
CHICAGO, U. S. A.

World's Champion Junior 3 Year Old



24612.8 lbs.
Milk
1395.06
Butter
in
365 Days

Finderna
Holligen Fayne

Schumacher Feed an Important Part of Her Ration
"Now I certainly claim we have a most extraordinary cow and I will see 'better conditions,' brighter eyes, more vigor and life, less sickness, fewer calves, etc. If SCHUMACHER FEED will help do this and make better records for you. It has proved BEST for the best cows in the world—it will prove BEST FOR YOURS."

**World's
Champion Junior
Three-Year-Old
Record Held Nine Months**

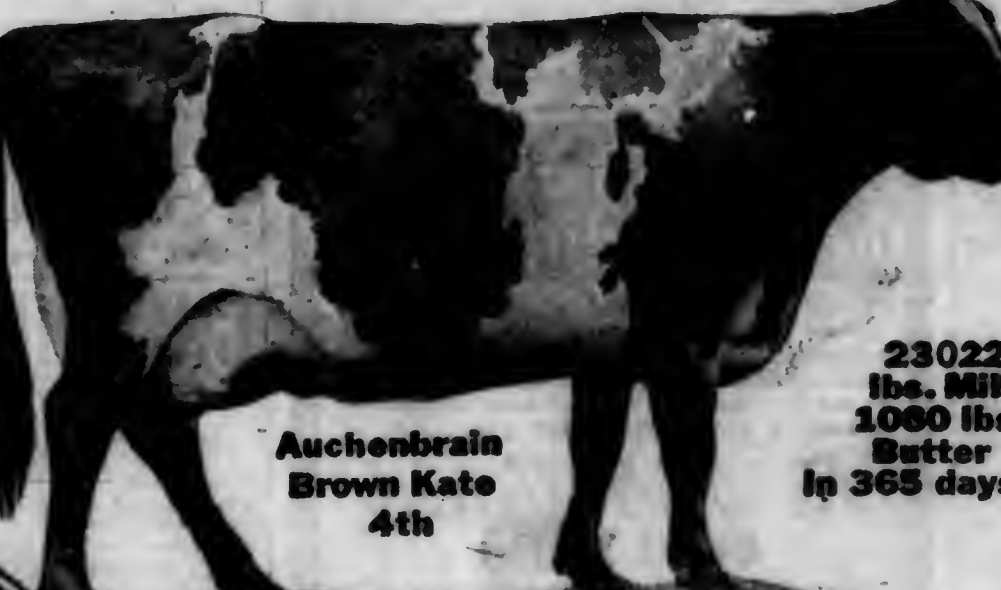


21239
lbs. 13
oz. Milk
946 lbs.
Butter in
365 days

Dutchland
Changeling
Colantha Lad

Schumacher Feed Praised by Her Owner
"Your SCHUMACHER FEED has scored another big success as our new world's champion junior three-year-old heifer Dutchland Changeling Colantha Lad is being fed this feed as part of her grain ration. Her stable mates, Dutchland Colantha Vale and Dutchland Colantha Mona are also being fed same ration and will have world's records in the near future."—Fred E. Field Holstein Co., Brockton, Mass.

World's Champion Ayrshire Cow



23022
lbs. Milk
1060 lbs.
Butter
in 365 days.

Auchenbrain
Brown Kate
4th

Would Not be Without Schumacher Feed
"We had such good results with your SCHUMACHER FEED, fed our world's champion cow—AUCHENBRAIN BROWN KATE 4TH, who produced 23022 pounds milk, 1060 pounds butter, in one year, that we have since fed it to all of our test cows. Yours truly,
Penshurst Farm, (Signed) E. S. Deubler, Supt., Narberth, Penn.

World's Champion Milk and Butter Cow



28403.7 lbs.
Milk
1470.5 lbs.
Butter
in 365 Days

Finderna
Pride
Johanna Rue

Gives Schumacher Feed Much Credit
"We have made another world's record with our Holstein cow Finderna Pride Johanna Rue No. 121063. I am glad to say that during her test she was fed mostly on your SCHUMACHER FEED, which in my estimation is a very valuable feed for dairy purposes."
(Signed) Bernhard Meyer, Finderna, N. J.

**World's Champion
Four-Year-Old Jersey for
Six Months**



14315.6 lbs.
Milk
765.9 lbs.
Butter Fat
in 365 Days

Flying Fox's Maid

Schumacher Feed Helped Make This World's Record
"As a good example of the result of feeding SCHUMACHER FEED, I am pleased to report the record of my first four-year-old Jersey, Flying Fox's Maid, who during the best proving record by nearly forty pounds. Her milk brought \$272.24 at wholesale, and the rest of her test was \$170.18, making a net profit of \$442.42 for the year. She was fed SCHUMACHER FEED for the last six months of her test, that feed being ground into her ration, and although fed on feed or hay, she finished in better flesh than she started. The result was so satisfactory that we are now feeding the same feed to the many Jerseys and Guernseys on our farm."
D. E. Hamilton, Prop., Utahland Farm, Portland, Me.

World's Champion Red Poll



Produced
863 lbs.
Butter in only
Nine Months

Jean Du Luth Beauty

Schumacher Feed a Liberal Part of Her Ration
"We are so well pleased with the work done by Jean Du Luth Beauty and Jean Du Luth Pear that we are making SCHUMACHER FEED a part of the ration in both our Red Poll and Guernsey herds. We have over 35 cows on official test."
Jean Du Luth Farm, Duluth, Minn.

Skyscrapers and Silos

The tallest office building in the world is the Woolworth Building, New York City. It is 55 stories high, cost \$7,500,000, and is fireproofed with over 30,000 tons of NATCO Hollow Tile. Safe against fire, wind pressure and shock and built for all time, it is a lesson to you, Mr. Farmer, when figuring on a silo and other farm buildings. The same material with which we have fireproofed the majority of skyscrapers of North America is being used extensively for the construction of the NATCO Imperishable Silo and all other types of farm buildings. For permanency, service and economy



Build With Natco Hollow Tile

Best for the city and best for the farm. NATCO buildings are weather proof, decayproof, fireproof and frost-resisting. They are attractive, too—buildings you'll be proud of.

Send for our new book "Natco on the Farm." Fully illustrated with photographs and construction details of all types of farm buildings. Tell us what you are going to build. Also ask for catalog describing the ever popular Natco Imperishable Silo— "The Silo That Lasts For Generations"

A perfect all-weather preserver in all parts, through all weather conditions. Handsome, durable, convenient in use, and a most valuable addition to your farm buildings.

National Fire Proofing Company
1117 Fulton Building
Pittsburgh, Pa.

23 Factories—Short hauls—Prompt shipments.

Tell us what you are thinking of building. We have plans for barns, corn cribs, garages, etc., free.

Meridale Jerseys

For nearly thirty years Meridale Jerseys have been famous for their proven superiority both in dairy type and dairy performance. We have never offered so fine a lot of youngsters of both sexes as are available from the herd this winter. Write for detailed description.

AYR & McKINNEY
300 Chestnut Street, Philadelphia, Pa.

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Farmers, one of the surest ways to make things pay is to grind and mix your stock feed. Grind what they want, when they want it. No lost time, no waste, the profit yours.

PEERLESS FEED MILL

will grind wet or green corn, alfalfa, cut hay and all kinds of grain. Noiseless in operation. Requires but little power. Plates are interchangeable; machine-cut or cast can be used. Machine-cut plates can be rescut when dull. Peerless Feeder Shredder makes every part of the stalk available for use. It's a revelation. To know about the Peerless Mills and booklet "How to Save Money on Corn."

Fodder Shredder write for illustrated catalog and booklet "How to Save Money on Corn."
A. M. DELLINGER
718 No. Prince St. Lancaster, Pa.

Only \$ DOWN and One Year To Pay

For any Size—Direct from Factory

You can now get one of these splendid money-making, labor-saving machines on a plan whereby it will earn its own cost and more before you pay. You won't feel the cost at all.

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No. 3 Junior—light running, easy cleaning, noiseless, durable, lifetime guaranteed separator. Shines 50 quarts per hour. We also make four other sizes up to our big 600 lb. capacity machine shown here—all sold at similar low prices and on our liberal terms of only \$24 down and a year to pay.

30 DAYS' FREE TRIAL GUARANTEED

You can have 30 days FREE trial and see for yourself how easily one of these splendid machines will earn its own cost and more before you pay. Try it along with any separator you wish. Keep it if it pleases; if not you can return it at our expense and we will refund your deposit and pay the freight charges both ways. You won't be out one penny. You take no risk. Postal brings Free Catalog Folder and direct from factory offer. Buy from the manufacturer and save money. Write TODAY.

Albaugh-Dover Co., 2130 Marshall Blvd., Chicago, Ill.

The Modern Dairy Farm

The modern dairy farm is a manufacturing establishment whereon raw material, such as grass, hay, corn, straw, roots and grain or other concentrates are manufactured into milk, cream, butter or cheese, and the by-products are further made into pork, veal, poultry and eggs. As in all manufacturing establishments the aims are: To reduce cost of production to the lowest point consistent with turning out a good article and maintaining the health and comfort of the employees; keeping up, or increasing the quantity, and improving the quality of the goods manufactured; selling at as high a price as possible or so as to leave a fair margin of profit over cost of production.

In order to accomplish this it is necessary, in the first place, to have a rich, productive farm, or purchase fertilizers to supplement the natural fertility of the land. Sometimes manure can be bought at a reasonable price, especially if the farm be located near a town, but otherwise a dairy farmer who is not getting good crops should experiment with home mixed, or commercial fertilizers, in order to find out what his land and crops need. This is the only safe plan.

The standard of one cow per acre has been attained on European dairy farms in a number of cases, and in a few instances in America. The standard is high, but unless we aim high we shall never attain very much. "Hit your wagon to a star," said a great American idealist. On those farms where one cow per acre is maintained it is customary to grow most, if not all the roughage on the farm, some meal, and to buy some concentrates, such as cotton seed meal, gluten meal, etc. This involves keeping the cows in the stable most of the time, and the use of small paddocks for exercise and fresh air, as pasturing is an expensive method of feeding cows, except where land is comparatively cheap.

The best crops for a dairy farm are, alfalfa (where it will grow), corn, mangels, red clover or some of the other clovers, and for the Northern States and Canada a 2-1 mixture of oats and barley for grain feeding. By a 2-1 mixture we mean mixing two bushels of oats and one bushel of barley and sowing from two to three bushels per acre of this mixture on well prepared land as early as possible in the spring.

The best rotation for an intensive, modern dairy farm in northern districts is, seed manured and sown or planted with corn which is preserved in the silo for both summer and winter feeding. One acre for 6 to 8 cows may also be given to roots, preferably mangels or sugar beets. The 2-1 oat-barley mixture should be sown the following spring after disking or plowing the corn land, preferably the former if the land is clean and mellow; and this should be seeded with a clover and grass mixture per acre of 6 lbs. red clover, 4 lbs. alfalfa, and 2 to 4 lbs. timothy or some other grass, according to locality. The third year one or two crops of hay are taken off; and the fourth year the land would be in corn again.

By following such a rotation the maximum amount of feed is grown on the farm; thus reducing the grain and feed bills as much as possible, although it is nearly always economy to purchase at least some concentrates to supplement home-grown feeds.

Having got the land in "good heart" and growing the greatest quantity of feed possible, the modern dairy farmer, if he has not already done so, turns his attention to the cows in his herd. Many

CLOVER CHEAP

Now is the Time to Buy. Crop very short. Buy before advance and save money. Get our special low prices and free samples of our pure, New Crown, New Crown Improved, Tested Clover and Timothy Seed. Also Alfalfa, Alsike, Sweet Vetch. All kinds grass seed. 100-page catalog free, quoting all field seeds. Save money by writing at once. A. A. BERRY SEED CO. Box 129 CLARINDA, IOWA

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You can easily find, where you want it and at the price you want to pay, through "Strout's Latest Farm Bargains," a big illustrated catalogue of money-making farms. Great variety in size and price throughout the East and South. Copy mailed free. A. A. Strout Farm Agency, Dept. 1880, Land Title Bldg., Philadelphia, Pa.

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Perfect hearing is now being restored in every condition of deafness or defective hearing from causes such as Catarrhal Deafness, Released or Stuffed Ears, Noise, Discharge, Ringing, Buzzing, Whistling, or Partially Destroyed Nerve Endings, etc. Write today for our 168 page FREE book on DEAFNESS, giving you full particulars and testimonials. WILSON EAR DRUM CO., Incorporated, 509 Inter-Southern Bldg., LOUISVILLE, KY.

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Do Away With the Truss

New Appliance invented guaranteed to retain rupture comfortably at all times

Sent on Trial

It is a well-known fact that while great improvements have been made in almost every conceivable thing to lessen the burdens of afflicted mankind everywhere, and to make the sufferer more comfortable, the undisputed fact still remains that ruptured men who are not only disqualified for work, but are also suffering untold misery and are each moment in danger of death, have been absolutely compelled to wear the same old, unsightly, cumbersome, torturous trusses that their forefathers used in the Dark Ages.

The pad or device that is applied to the rupture is the all important feature of any mechanical arrangement for retaining rupture. Nearly all the trusses of to-day consist of a pad of wood, hard rubber, or felt attached to a band of steel or cloth with great pads on the back which necessarily press upon and often disease parts of the body that before were in a perfectly healthy condition.

The best crops for a dairy farm are, alfalfa (where it will grow), corn, mangels, red clover or some of the other clovers, and for the Northern States and Canada a 2-1 mixture of oats and barley for grain feeding. By a 2-1 mixture we mean mixing two bushels of oats and one bushel of barley and sowing from two to three bushels per acre of this mixture on well prepared land as early as possible in the spring.

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Further information regarding the Appliance, rules for self measurements and catalogue sent Free in sealed envelope.

BROOKS APPLIANCE CO.

1722-A State Street Marshall, Mich.

of the best dairy farmers are adopting standards of 8,000 to 10,000 lbs. of milk, and 300 to 400 lbs. milk fat, per cow, in a year. No dairyman in these days of high cost for feed and labor can afford to keep a cow which produces less than 6000 lbs. of milk and 240 to 250 lbs. of milk fat in a year. In order to know each cow's production individually, it is necessary to adopt systematic weighing and testing of the milk from each cow in the herd—not the herd as a whole. A milk scale, milk record sheet and a Babcock tester are part of the equipment on every modern dairy farm. One strong point in favor of these is, they cost very little money. The whole outfit will not cost more than \$10 or \$12, and it does not take more than half a minute per cow daily to weigh and record her milk. The tests for fat may be made monthly; or, if done two or three times during the lactation period, it will be near enough correct for all practical purposes.

The Pure-Bred Pays

One hundred dollars is pretty good traveling expense now, isn't it? We have two horses, one five and the other three years old; they are both from the same mare, a high grade Percheron. One is from a scrub stallion, the younger from a registered Percheron. In the lives of these two horses, geldings, the one from the pure-bred horse and the high grade mare will represent a difference of this amount of cash. An insignificant mongrel of a stallion was kept in the neighborhood. As a matter of convenience the mare was taken to him. The progeny is smaller than the mare, he is, no better than his sire, he is misshapen, eats twice what the horse from the pure-bred sires, is soft, his disposition is bad, and although he represents the average farm horse, compared with the three-year-old of good breeding, he is undesirable. The pure-bred stallion was owned some distance away, and since then we have made use of the registered stallion of breeding. We have another mare, weighing about 1,000 pounds. She has been taken to the pure-bred stallion and her colt is vastly superior to the colt from the good mare and the poor stallion, age considered.

The pure-bred pays. This is the lesson we have learned in this particular instance. The 3-year-old weighs 400 pounds more than the 5-year-old, he will sell for \$100 more, and it will cost one-half more to keep the insignificant horse, compared with the good one. The labor capacity is one-half greater today in favor of the better and younger horse. We have tried them under all conditions, on all machinery, and have come to this conclusion as fair. If we should keep these two horses for ten years, the difference of \$500 in the cost of keep, the earnings and service performed would be a rather small figure.

Yet there are hundreds of farmers who still contend that when they lose a poor horse the loss is smaller. I had rather do business with dollars and have a measure of profit, than do business with pennies. We tried out the pure-bred and the scrub proposition on hogs. A scrub sow bred to a pure-bred boar, and a very high grade sow bred to a poor boar showed us interesting results. The scrub sow bred to a good boar produced pigs that fattened more cheaply, acquired maturity quicker than from the high grade sow and scrub boar. We bred the two sows to the same pure-bred boar and the high grade sow produced superior pigs. This observation with pigs has covered about three years, and

our conclusion has been based on results, and that is, the "best is none too good."

"Your price is too rich for my blood," a farmer said when he was told that service from our registered bull was \$1.50, and that it was costing us more than twice this amount to maintain him for our own herd service. The farmer took him to a nondescript animal, and it will be a gamble when the calf comes whether it is inclined to beef or dairy, but probably will represent the undesirable features of them all.

We shook dice as far as breeding is concerned. Our original stock was Short-Horn; later my people became enthused over Jerseys, and today our herd is made up of Holsteins. There were periods when other blood was introduced that our herd was at its minimum efficiency. We would have been thousands of dollars ahead if we had stuck to one breed.

A good Short-Horn is superior as a dairy and beef animal, to a nondescript. We show Short-Horn characteristics. They show the persistency of good blood, and they are as good as our best. This blood has persisted and predominates in these two cows after 35 or 40 years. It pays to stick to one good breed, whatever it is, and my parents and grandparents would have made much more by sticking to one breed, than by the hard work digging out stumps, breaking up the new ground and trading bulls.

The best is none too good, and stick to it. That's why the pure-bred pays.

Clean milk is obtained only by a clean dairyman.

I Want to Send Every Reader of This Paper

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By Mail—Postpaid—20 Days' Free Trial

I don't even ask you to risk a penny for postage. I want to prove to you before you pay and at my risk, that Corona Wool Fat is the greatest healing compound ever used on the farm for all kinds of hoof and skin diseases. Produced from the skin and wool of the sheep, this great natural remedy has no equal as a cure for Hard and Contracted Feet, Mud Fever, Split Hoofs, Corns, Greasy Hoof, Thrush, Quarter Cracks, Hard Wire Cuts, Galled Shoulders, Sore Teats of Cows, Ulcers, etc. It

Heals Without a Scar
—grows hair over cuts and sores—makes new hoofs. Often worth hundreds of dollars by saving injured animals from lameness and permanent lameness.

Send No Money—I Pay the Postage
If you have never sent for a trial can, just drop me a postcard or letter saying you want to try Corona Wool Fat 20 days at my risk. Use it according to directions and when 20 days are up if you think it does what I claim, send only 50c as payment in full—if you are not pleased, simply say so. I'll take your word for it and cancel the charge. Write today. Mention shipment you intend to use 15 oz.

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As low as \$7.90 \$10,000.00
Bucks This Month or a Year. Portable Wood Saw. This is the cheapest saw made. Only \$1.90 saw frame to which a ripping table can be added. Guaranteed. 1 year money refunded and all charges paid if not satisfied. Write for catalog. Barber & Zook Co., Inc., Seattle, Wash., Pa.

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—In Advance on This Great 60 Days Feeding Offer

I want every farmer and stockman to see for himself, before he pays, what SAL-VET will do for his own farm animals. I want you to see how it will destroy the ravenous destructive worms that are eating the high priced feed which should go to nourish your animals—how it will stop your losses from worms—how it will aid digestion making your stock thrive better—grow faster—gain in weight and value. I want to prove my claims right on your own farm before you pay me a cent. You take no risk whatever.

The Great Worm Destroyer SAL-VET The Great Live Stock Conditioner

SAL-VET is not only superior to other preparations for ridding stock of worms and aiding digestion, but is also the cheapest; costing only 1/2 of a cent a day for each sheep or hog and only 1 of a cent a day for each horse or head of cattle. Requires no dosing—no drenching—no starving—no trouble to feed. It is a medicated salt but without antimony. Simply give your farm animals free access to it and THEY DOCTOR THEMSELVES. I want to send you enough to last all your stock 60 days. I want to show you results before you pay a penny. I get thousands of letters like these:

"When I began feeding SAL-VET to my pigs, they were very wormy, coughed a great deal, and some were runty. I have now fed SAL-VET for about seventy days, and I assure you these pigs look different. They are all in fine condition, and there is not a scrub in the bunch."
GEORGE THORNTON, Rt. No. 2, Brooklyn, Wis.

"Our sheep became infested with stomach worms and were dying almost daily. Reading of the remarkable cures accomplished by SAL-VET I decided to try it. Much to my surprise I have not had the loss of a single sheep since. SAL-VET does exactly as you claim."
JOHN E. TEMPLIN, Blanchester, Ohio.

Send No Money—Just the Coupon

Now fill out the coupon—tell me how many head of stock you have and I will supply you enough to last all your stock 60 days; you pay the freight charges when it arrives and feed it according to directions. If SAL-VET does not do what I claim and you make a specific report in 60 days, I'll cancel the charge; you won't owe me a penny. Address SIBNEY R. FEIL, Pres., THE FEIL MFG. CO., Chemists, Dept. 106, CLEVELAND, O.

Prices
No orders filled for less than 40 lbs. of this money-saving product. Send for a 100 lb. trial can based on 1 lb. of SAL-VET for each sheep or hog and 4 lbs. for each horse or head of cattle. The prices are a little higher on second cans of extra "Drift" charge.

"This winter, I fed my hogs only one-half what it has taken heretofore, but have given them a little SAL-VET in addition. They are in good condition and look fine."
C. A. HINES, Nottingham, Pa.

"Before feeding 'SAL-VET' I was losing hogs, but since then, not a single hog has died. I have lost some of them, and they were in very good condition."
JOSEPH K. BITNER, Spring Mills, Pa.

THE FEIL MFG. CO.
Dept. 106-1-15-16 Cleveland, Ohio

Simply send enough SAL-VET to last your stock 60 days. I serve to pay the freight, feed it as directed, and will pay for freight on return. If you are not satisfied, I will refund your money.

I have _____ hogs _____ sheep _____ horses _____ cattle
Name _____
P. O. _____
Ship. Via _____ State _____

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TRADE MARK REG. U. S. PAT. OFF.

will reduce inflamed, swollen joints, sprains, bruises, soft bums, hemorrhoids, boils, evil, quitters, fistulas, or any unhealthy sore quickly as it is a positive antiseptic and germicide. Pleasant to use; does not blister under bandage or remove the hair and you can work the horse. \$2.00 per bottle, delivered. Book 7 K free.

ABSORBINE, JR., antiseptic liniment for mankind. Reduces Painful, Swollen Joints, Gout, Warts, Strains, Bruises, stops pain and inflammation. Price \$1.00 per bottle at dealers or delivered. Will tell you more if you write. Manufactured only by W. F. YOUNG, P. D. F., 25 Temple St., Springfield, Mass.

Feed Less Corn and Get More Pork

Profit-paying hogs are only produced by right feeding. *The must have animal food.* REICHARD'S DIGESTER TANKAGE hastens growth—promotes health—reduces feed costs—swells profits. Samples and price circular on request. Write today. ROBERT A. REICHARD, 14 W. Lawrence St., Allentown, Pa.

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and NEW LOW PRICES
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Learn why I have 400,000 customers. Get my prices. Test quality of Brown Fence at my expense. 180 styles direct from factory. 1300 per foot up, freight prepaid. Hard, high carbon, double open weave wire, heavily galvanized. Gates and steel posts too. Write postal now for big, new catalog and sample—FREE. Address Dept. B3, The Brown Fence & Wire Co., Cleveland, O.

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Get It From
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Made of Open Heart wire, heavily galvanized—strong, durable, long lasting, rust-free. Sold direct to the farmer at wire mill prices. Here's a few of our big values:
26-Inch Hog Fence—12 cts. a rod.
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Special Prices on Galv. Barbed Wire.
Double galvanized. Gates and steel posts too. Write for big, new catalog and sample—FREE. Address Dept. B3, KITSELMAN BROS., Box 224, Muncie, Ind.

CRUMB'S IMPROVED WARRIOR STANCHION

"My barn that was BURNED" was fitted with Crumb's Warrior Stanchions. If it had not been for the case with which these fasteners were opened I should have lost my cows, writes Mr. Everett Gink, Barnstead, N.H. Booklet free. WALLACE CRUMB, Box 16, Forestville, Conn.

Cheap as Wood We manufacture **Lew and Farm Fence**, Sell direct, shipping to users only at manufacturers' prices. WRITE FOR FREE CATALOG. UP-TO-DATE MFG. CO., 995 10th St., Terre Haute, Ind.

IT PAYS TO DEHORN

Dehorned cows give more milk, take less time to milking, are easier to handle, dehorned steers fatten quicker and are not so nervous. Dehorned calves grow faster and are easier to handle; remove them with the new Improved Keystone Dehorner. Quickest, cleanest, strongest and most satisfactory. Clean, sharp and sliding cut—no crushing, no bruising. Money back guarantee. Send for booklet. M. T. Phillips, Box 112, Pomeroy, Pa.

COLLINS' JERSEY RED the best pig bred

THE RIGHT HOG for quick profits. Grows fast when young, fattens quickly and cheaply. At any age, producing big fat for meat. Booklet is free. 375 lbs in 9 months!

Churning Troubles
Troubles arising from winter butter making may largely be overcome by keeping the cream to be churned at a temperature of 52 degrees F. until two days before churning, when it should be placed where the temperature is about 75 degrees F. The cream should be kept at 58 to 60 degrees F. during churning time and when the butter collects into small nut sizes the butter milk should be drained off and water at a temperature of 60 degrees F. should be poured over it, repeating the rinsing process two or three times. With the last rinsing give twenty churning revolutions and draw off the water. To work the butter place the particles on a flat board and strew the salt over it uniformly and work just enough to distribute the salt evenly throughout the butter.

Milk pails should be of such construction as to enable them to be easily cleaned and kept bright. This is best accomplished by having the inner surface of the pail smooth and free from seams or crevices, which serve as a place for dirt to accumulate and make its removal difficult. The pails should have the seams smoothly soldered and should be heavily tinned to prevent rusting. They should have a narrow or covered top to exclude as much falling dirt as possible.

Queries Answered
Cow Falls to Conceive.—W. B. writes: "A Jersey cow gave birth to a dead calf on Sept. 1, 1914. She did well after calving and the periods of estrus appeared reasonably regularly. I bred her several times without results. During the summer she showed estrus about every week. Since October 1st she failed in milk supply and what she yielded soon acquired a smell and a bitter taste. It was unfit for any use, hence I have allowed her to go dry."

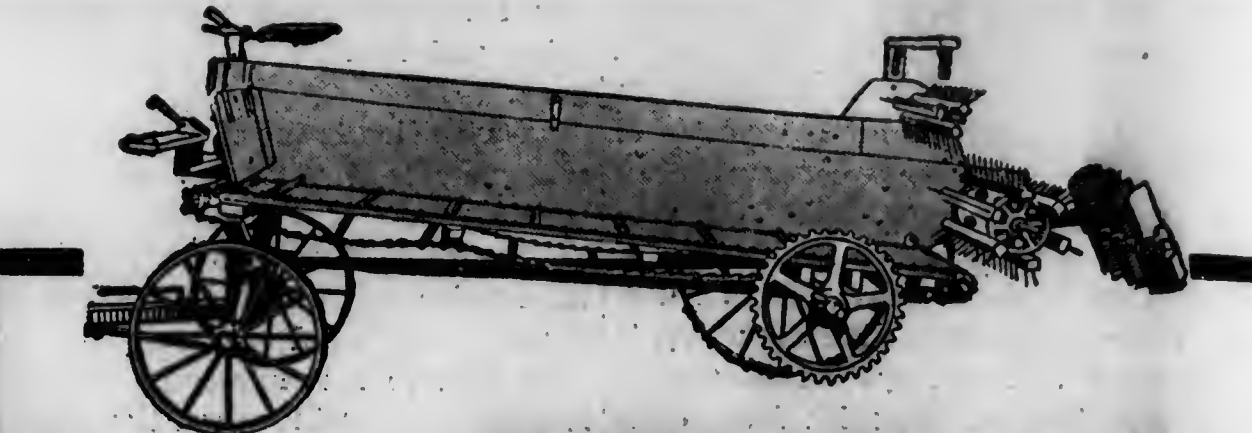
The symptoms, especially the very frequent appearance of estrus, indicate diseased ovaries, for which nothing can be done. The most common ovarian disease is tubercular. The only means of determining whether she is tubercular is the tuberculin test by a veterinarian. If she is tubercular it will be wise not to endeavor to breed her. The cause of sterility may be a closure of the entrance into the womb. When in estrus oil your hand and arm, insert the hand through the vulva and vagina until the fingers reach the neck of the womb. Then with a rotary motion dilate the entrance into the womb until your finger will enter readily. In some cases the finger has not sufficient power and the use of a special instrument by a veterinarian is necessary. Breed in about an hour after operating.

The altered characteristics of the milk which you mention is not unusual in cows that have been milking a long time. This cow had been milking 13 months. We cannot explain why the milk sometimes becomes bitter in such cases. In most cases treatment is ineffective and all that can be done is to allow her to go dry and the milk will be normal after the next calving.

Some like to feed grain on, or mixed with, the silage, while others prefer to feed grain before and silage after milking. The latter practice is to be preferred except in cases where nothing is fed before milking.

The silo makes it possible to raise more feed and to keep more cows on the same acreage and substitutes certainty for uncertainty in the management of the herd to an extent impossible in any other way.

For success in raising horses it is necessary to pick out a breed and stick to it. Avoid crossing with others.



Yes, Get a NEW IDEA if You Have to Mortgage Your Farm

If your roof leaked would you say "I can't afford to fix it" and let the rain go on damaging your home? Not by a jugful! You'd fix that roof if you had to borrow the money.

Your farm without a spreader leaks profits. All the manure doesn't reach the land and what does go isn't properly spread. It misses some spots and in others is too thick. A farm with 20 head of cattle and horses loses enough manure value yearly to buy a spreader.

Make your farm pay its real profit. Stop the waste of manure by the fork-and-wagon method. Make money with the NEW IDEA, the spreader with so many special features that it's the acknowledged leader. You can load it as high as a wagon box and spread 5, 6, 9, 12, 15, 18 loads per acre without fear of clogging.

The New Idea pulverizes finely and spreads more evenly than you could possibly do with a fork. The double cylinders take care of that. Our revolving distributor, a patented feature, spreads the manure seven feet wide, across three corn rows. It spreads beyond the wagon tracks and you don't have to drive over spread manure.

No Gears to Strip, Break or Freeze

Another proof of New Idea superiority. This spreader is operated by a heavy sprocket chain. This saves power and is easier on the horses. Special axle feed. Strong chain conveyor running over eight bottom brings every bit of manure to the cylinders. Can't slip and won't race going up hill. Wheels track, making easy going.

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New Idea Spreader Co., "Spreader Specialists"
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This Book Will Save You \$100 TO \$500 IN 1916
THIS BOOK IS YOURS FOR THE ASKING

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1916 Sanitary Cream Separators

If you knew all there is to know about separators you couldn't build a better one—one that would run easier, skim closer or be better in material, more durable or more satisfactory. You couldn't build as good a one at a lower price, either. Where other machines are good the Sanitary is as good or better. Where they're wrong, it's right.

If the New Sanitary is as good as I say it is, you can't afford to buy any other. If it isn't, I couldn't afford to offer it on ninety days' trial and guarantee for ten years against defective material and workmanship. Read the complete description in this big, new, 200-page book of bargains.

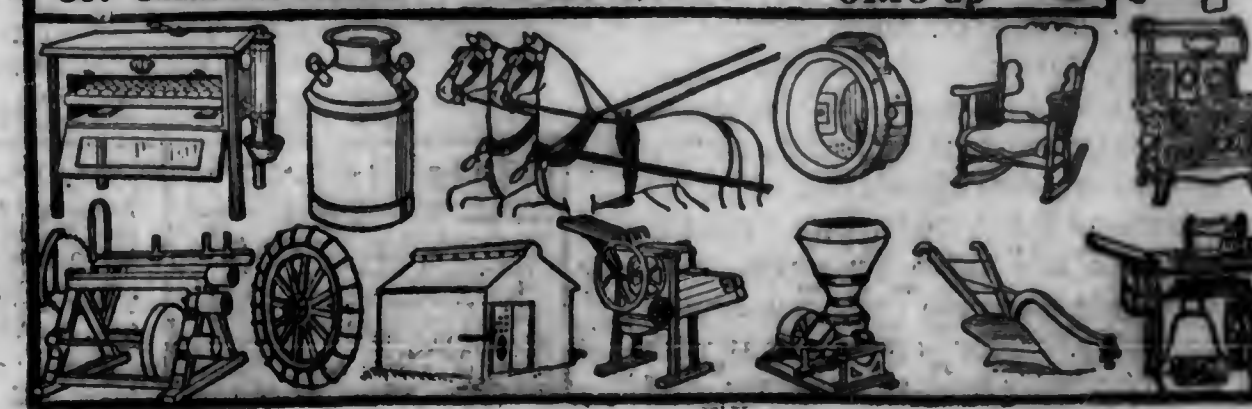
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My unequalled, 1916 Model, Masterpiece Six Horsepower Engines have taken the field by storm. Biggest of all engine values. Other Models from Four to Sixteen Horsepower equally good. One and three-fourths to two and one-fourth Horsepower pumping and light weight engines built right and priced right. Don't get fooled on high speed, light weight engines. Insist on heavy weight, large bore, long stroke and slow speed when you buy. The new 200-page book tells why—write for it.

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Wider, finer spreading than ever. All steel, double pulverizing beaters. Lighter draft, low down, double chain drive, cut under front wheels, channel steel frame, treaded like a shoe, wide, steel tongue, endless apron, force feed, top of box 48 inches high, latest model V-rake. Five rolling, plain—each or note. All fully described and priced in the Galloway book.

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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

Liming the Land for Alfalfa

Alfalfa, more than other legumes, requires a sweet or neutral soil for its best development. Acid soils will not grow a satisfactory crop of alfalfa. This has been demonstrated thousands of times in the Eastern States. There are very few, if any, soils east of the Ohio river that are not acid, unless lime has been frequently applied. The chief reason for correcting the acidity of the soil is that the desirable nitrogen-gathering bacteria, which so greatly assist the growing plant, will not thrive except in a sweet soil. Then, also, the alfalfa plant itself demands considerable quantities of lime. The ash of alfalfa contains about 26 per cent. of lime. This is another reason why alfalfa hay is such a desirable feed for growing animals. No one should undertake the culture of alfalfa without first satisfying himself that the land is not acid. If acid, provision must be made for applying lime in sufficient quantities to correct the acidity. Unless one is positive that the land has been recently limed in sufficient quantities the following test may be easily made: If blue litmus paper (which may be procured at any drug store) is turned red or pink by pressing it between the halves of a moist clod, it is quite evident that the soil is not sufficiently sweet to grow alfalfa. By sending a few ounces of the soil to your state experiment station they can, upon examination, tell you how many pounds of lime will be required per acre in order to correct the acidity. A great deal has been said about the necessity for liming the soil for alfalfa, yet it may be stated here that the fact has not been over-emphasized. The best and most enduring stands have been secured where plenty of lime has been applied. Unlimited land, or soil that has received a very light application, may start the alfalfa, but the growth will be slight, and rapidly disappear. The writer examined a number of fields last year which were seeded down in August, 1914. In practically every case where the alfalfa was not making a good growth, although the stand was perfect, the difficulty was due to a slightly acid condition of the soil.

Tests for the lime requirements of these soils showed that several hundred pounds of lime per acre would be required to put them in good condition. A number of alfalfa co-operative experiments conducted by the Delaware Station showed that where lime was used alone the growth of alfalfa was greater than where fertilizers were used singly, on plots side by side. This indicates the great need of alfalfa for lime on eastern soils. The growth of alfalfa was, of course, much better where both the fertilizers and lime were used on the same plot.

The lime should be applied at least ten days or two weeks before seeding. If the soil has been summer fallowed the lime may be applied a month before seeding. The reason for the early application of lime is to enable the soil to become thoroughly corrected before seeding. If the ground limestone, unburned, is used, it may be applied even earlier to advantage, as it is less finely divided than the burned forms of lime. It is important to harrow in the lime very thoroughly. The harrowings tend to get the lime more evenly distributed through the moist soil and in that way hasten the sweetening process. Any form

of lime will serve the purpose, providing twice as much of the ground limestone, unburned, is used as one would use of the burnt or prepared forms of lime. Ground oyster shells, where available, may be used to good advantage also, for this purpose. Light sandy soils do not generally require as much lime as the heavier clay lands. In most cases 1000

pounds of quick or burnt lime per acre will be sufficient for light soils, and one ton per acre for heavy soils. If ground limestone is used very large quantities, three or four tons per acre, may be used with no bad results. However, one should not apply quick lime in excess at any time. Very often it happens that it will pay to re-lime alfalfa after it has stood for two or three seasons. In this case the lime in whatever form should be applied in the late fall when the plants are in a dormant condition. The winter rains will gradually dissolve and carry the lime down into the soil. Careful experiments have shown that

there is little if any difference in the effect of the different forms of lime on the growth of alfalfa. The form of lime to use should be governed largely by the price per ton, purity, freight haul and the distance of farm from railroad station. Ground limestone, while much cheaper per ton, is only one-half as concentrated as the burnt stone lime, hence account will have to be taken of the expense of handling.

Liming is one of the essentials in preparing for alfalfa, and in a humid climate, such as we have in the Eastern States, successful alfalfa culture is impossible without it.



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The Accurate "Natural Drop" Planter

ACCURATE—because it has the "Natural-Selection" drop—an improvement over all other methods.

Kernels do not have to be tipped on edge to enter the cells. Surface of hopper bottom and openings to seed cells are oblique, or sloping. The kernels naturally move toward and fill the cells.

A full-variable drop planter. Plants two, three or four kernels as desired—all you do to change number in the hills is to move foot lever.

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All corn plates for this planter have 16 cells. Therefore, the same drilling distances are obtained with one plate as can be secured on other planters that require 8, 12 and 16 cell plates.

The gears are always in mesh and can be shifted at any time (even when in operation) to change drop or drilling distances.

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Write for free booklet, "More and Better Corn."



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The Plows with Perfect Fitting Parts

SYRACUSE shares fit perfectly—extra shares go on easily. A smooth joint is formed between share and moldboard and share draws up snugly to its place.

Remember that Syracuse cast shares are chilled throughout their entire cutting edge and point.

The under side of point and cutting edge is also chilled—of vital importance in preserving the proper pitch and extending the period of usefulness.

Two bolts in the share instead of one and there is a rib on back of share that strengthens share and standard. Lug holds moldboard and share closely together.

In addition John Deere Syracuse Plows are built with long handles, which produce steady running qualities and make the plow handle easily.

Write us for free literature on the 1361 series—chilled plows, left hand, that work well in sandy and gravelly soils as well as in loam, turn and perfectly and have sufficient curvature to pulverize in stubble land.

Also the 1878 series, a complete line of right and left hand cast beam chilled plows; the 501 series, sloping landside chilled plows and the 16 series hillside plows, light weight and clean turning.



Better Farm Implements
and How to Use Them

BOOK FREE—168 page reference book—tells all about a complete line of farm implements. Describes and illustrates: Plows for Light Tractors; Steel and Chilled Walking and Riding Plows; Disc Plows; Cultivators; Tooth Harrows; Lister Plows and Cultivators; Alfalfa and Root Tools; Turn and Mountain Wagons; Towing Gears; Manure Spreaders; Inside Cap and Portable Grain Elevators; Corn Shellers; Hay Loaders, Stackers, Sweep Rakes, Mowers, Self-Dumping Sulky and Side Delivery Rakes; Hay Presses; Kaffir Headers; Grain Drills and Seeders; Grain Binders; Corn Binders; Gasoline Engines. This book sent free to every one who states what special implements he is interested in and asks for Booklet No. X-3.

John Deere Two-Way Plow

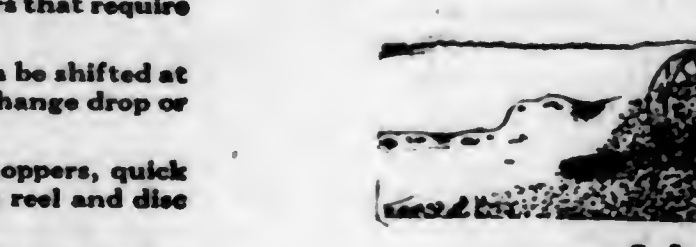
Steel Frame—Patent Auto Foot Frame-Shift

HIGHLY practical and convenient for working soil all in one direction on hillside or elsewhere. Also adapted for plowing irregular shaped pieces of land or any other kind of plowing.

Auto foot frame shift works with great exactness. Slight foot pressure swings frame and moves working plow the degree required. Patented.

Automatic horse lift—no work for operator. Each plow independent of other—each has own depth regulating lever and lifting device.

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The Spreader with the Beater on the Axle

ONLY hip high to the top. Wheels out of way when leading. Mounting the beater on the axle is patented. Write for Spreader booklet.

Three exclusive John Deere Spreader features:

(1) Beater on the axle—nothing else like it. (1)

(2) Revolving Rake—load moving back to beater revolves the rake. Draft actually less. Even spread certain—no bunching. (2)

(3) Ball Bearing Eccentric Apron Drive—requires no attention. Performs wonders in the working of the spreader. (3)



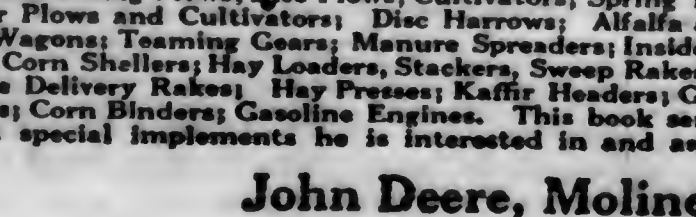
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The Flexible Spring Pressure Disc

MODEL B—the only disc that cuts at even depth its entire width. It has a patented spring pressure lever. With this lever, pressure can be regulated at inner ends of gangs to cut out dead furrows or disc ridges without burying the harrow.

The Model "B" does not crowd toward the bottom on hillside or in overlapping. The gangs are independent of each other and can be given the proper angle to work right under such conditions.

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Good Markets — High Prices

Prizes Awarded to Western Canada for Wheat, Oats, Barley, Alfalfa and Grasses

The winners of Western Canada at the Soil Products Exposition at Denver were easily made. The list comprised Wheat, Oats, Barley and Grasses, the most important being the prizes for Wheat and Oats and sweet stake on Alfalfa. No less important than the splendid quality of Western Canada's wheat and other grains, is the excellence of the cattle fed and fattened on the grasses of that country. A recent shipment of cattle to Chicago topped the market in that city for quality and price.

Western Canada produced in 1915 one-third as much wheat as all of the United States, or over 300,000,000 bushels. Canada in proportion to population has a greater exportable surplus of wheat this year than any country in the world, and at present prices you can figure out the revenue for the producer. In Western Canada you will find good markets, splendid schools, exceptional social conditions, perfect climate, and other great attractions. There is no war tax on land and no conscription.

Send for illustrated pamphlet and ask for reduced railway rates, information as to best locations, etc. Address

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Before buying elsewhere come to Our Nursery and see for Caledonia.

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OFFERS well made with cross bar, blind joints, glass, \$1.40 per sq. ft.

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GILLES & BRO., 231-23 N. Front St., Philadelphia. Estd. 1894.

Strawberry

Strawberry plants, \$1.00 per 1000. True composed and valuable illustrated catalog free, worth \$1.00. Haver Plant Nursery, Merrill, Mich. Haver Plant Nursery, Merrill, Mich.

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O. O. MATTHEW, 137 Andrus Bldg., Minneapolis, Minn.

THE GARDEN

All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

Edited by W. F. MASSEY

Garden Reminders

Soon after the middle of January I sow in a frame seed of the Prizetaker and Giant Gibraltar onions to make plants for setting out in late March. North of Philadelphia February will be better, and use a mild hotbed.

At same time sow seed of the Charleston Wakefield and Copenhagen Market cabbages for a succession to the fall sown plants.

Sow radishes and beets in a mild hotbed, as I have heretofore described as being sown here in a cold frame. Then if you have the portable frames you can harden off the beets in March and use the frame for tomato plants.

Sow in frame or mild hotbed seed of the New York or Wonderful lettuce for setting in open ground as soon as hard frost is over. This variety makes very large heads and stands the heat of late spring better than other lettuce.

In another frame sow seed of leeks if you want to transplant them early for fall use. Otherwise sow them later in the open ground. Do not thin the beets in the frame, but wait until they are hardened off and the frame removed, and then you can transplant the thinnings.

If you intend to do any tile draining next spring, better haul the tiles this winter, when roads are good, and pile them in the field ready for use.

Doubling Cabbage Profits

M. A. HEROLD.

Cabbage profits can be doubled by turning the cabbage into sauer kraut. This requires a little more labor than is necessary if the cabbage is sold, but it pays. The kraut can be made on cold and rainy fall days when no work can be done in the fields, and will prove a profitable employment. The work is done very quickly and therefore more profitably if an up-to-date slicer is used.

There are many ways of making sauer kraut, but the method we have used, and which has produced kraut of excellent quality which keeps splendidly, is the following:

After removing the outer leaves, cut the head of cabbage in half and remove the cores. This removing of the cores is important, as it affects the price if the cores are left in. With the cores sliced in, the kraut is much coarser and not very high in quality, therefore brings a much lower price.

Next slice the cabbage. Fourteen quarts of the sliced cabbage requires two handfuls—or one cupful—of salt. Place the cabbage in the receptacle, which may be a lard or butter firkin, or a barrel, which has been thoroughly scrubbed and scalded, and spread the salt over it. Then tamp thoroughly with a "stomper." That is the local name for it, but a description of it may be necessary. It is made of oak and weighs about 7 pounds. The thickest end, which does the tamping, is 3 inches in diameter, tapering to one inch in the handle. Continue placing the 14 quarts of cabbage and then the salt, and finish each time by tamping until the receptacle is full. Be especially careful that after each painful you tamp thoroughly. Place a clean white cloth over the top. Finish by placing a lid that fits inside the barrel or firkin, and a weight on the lid. A heavy stone which

has been well scrubbed is what we use. When the kraut is wanted in a hurry we put it in a warm place. It will then ripen in four or five days. If it is left in the cellar it takes from two to three weeks to ripen.

By thus turning the cabbage into kraut cabbage profits can always be doubled, and sometimes more than doubled. As cabbage, what we sell for \$3 will make a barrel of kraut which will bring from \$6 to \$8. This profit is evident, and worth trying for. This is the average year and price. When cabbage is scarce kraut brings as high as \$18 per barrel.

Not only can the solid heads of cabbage be used, but the small, unsalable heads may also be turned into kraut. Then where acres of cabbages are raised there are quite a number of heads that burst and cannot be sold; but they can be turned into kraut instead of going to waste, and prove an additional source of profit. We usually use these bursted and small heads to make kraut in lard and butter firkins. We get from \$1.25 to \$2 a firkin for this kraut, the price depending on the price of cabbage that particular year. That is selling the kraut by the firkin to private families. A better price could be realized if it were sold by the quart.

Pennsylvania.

Queries Answered

Wild Mustard.—W. A. D., New York, writes: "Is there any sale for the wild mustard seed?"

I do not know of any sale for wild mustard seed except by the men who sell it mixed in crimson clover seed, and from the looks of many clover fields here it seems that there is a good deal sold in this way. Perhaps some of the wholesale druggists can tell you if there is any use for the wild mustard seed. I do not know of any.

Hollow Celery.—C. L., Pennsylvania, writes: "What causes celery stalks to grow hollow? Also what cure can there be for little snails working on celery stalks, which thus makes the celery look ugly?"

The reason for hollow stalks is generally the result of poor seed when the celery is grown on good clay loam soil. On black muck soil any celery is apt to grow hollow stalked. While celery grows finely and makes showy plants on muck soil, the quality is never so good as where it is grown on strong clay loam or even on sandy upland. Where celery grows hollow on such soils it is usually the fault of the seed stock from which the seed came. There are a number of ways for protecting plants from snails. Like cut worms, they are very fond of bran. Dampen some bran slightly and mix 50 parts of bran to one part of Paris green, and scatter this along the rows of celery. Fresh lime scattered along the rows will also have a good effect. Cabbage leaves laid along the rows will make good traps and the snails will be found under them in the morning. Then with a lantern at night you can gather many of them.

Grass, weeds and litter should be removed from the base of each tree. If mice can find nesting material against the tree they are likely to gnaw the tree during winter. Any decaying plant growth makes a good winter cover for orchard lands, but precaution should be taken to prevent fire from spreading to the orchard if this cover is abundant.

OUR EXPERIENCE POOL

"Experience is the best teacher." This Experience Pool is a twice-a-month Farmers' Institute for the exchange of practical ideas by practical farmers. We want them to give their experience, as well as suggest topics for future discussion. We publish this department so that all may have the benefit of the tangible experience of others on every subject pertaining to the farm. Let all contribute to the pool. A cash prize of \$2.00 will be paid for the best contribution, \$1.00 for the second and 50 cents for each other contribution published. The only condition is that you are a yearly subscriber to the paper. Write on one side of paper topics must be in our hands at least 15 days before date of publication. Do not forget to suggest ahead topics for discussion. Address all communications to "Experience Pool," The Practical Farmer, Phila., Pa.

Topic No. 1188, Feb. 1.—Will You Use Wide or Narrow Tires on Your Wagons This Year, and Why? Give Any Interesting Experience You May Have Had with Either.

Topic No. 1189, Feb. 15.—Give Your Experience in Hatching Eggs with Incubators. Tell Why You Prefer Them to fens.

Topic No. 1190, March 1.—Which What Truck Crops Have You Been Most Successful? Give in Detail Method of Growing and Marketing.

Topic No. 1187—Describe in Detail How You Cultivate and Fertilize Your Orchard. Give Your Experience in Spraying and Tell How You Market Your Fruit.

A. O. S., Marlton, N. J.—The cultivating of our orchard is done with a disk harrow. We start in the spring as soon as the frost is out and the ground settled. We go as near the trees as possible without skimming them; after we go one way we turn and go the other, and try and harrow both ways every week. If sod gets around the butt of trees we go in with 1-horse plow and spin it away. We seed down with crimson clover if we can get it in by Aug. 20th, or rye and vetch later, and if too late, rye alone. We go over the ground with a smoothing harrow.

Our spraying begins in February, if we have any scale; if not, we don't start until the middle or last of March, according to ground conditions. When we spray in February we use scale oil and later spraying we use lime and sulphur, and after the blossoms are off we use poison. We use arsenate of lead for stone fruit and Bordeaux mixture for apples and pears. Spray thoroughly. We spray three times with this spray on apples and pears, and twice on peaches, and about the first of June we spray peaches with home-made lime and sulphur for brown rot.

In picking apples, pears and peaches we go over our trees three times and pick the larger ones off, and those remaining will grow three times as fast. After the third picking we clean the trees up.

The pears are put in baskets and piled in cellar and left to ripen. We pack our fruit in five-eighths baskets and 1-bushel hampers and make two grades of apples and pears and three grades of peaches. Sell through a commission house.

In fertilizing we use a fertilizer without much ammonia. We use nitrate of soda alone on peaches when the fruit is about half grown, using about four small handfuls to a 4 or 5-year-old tree; that is besides the other fertilizer used. We put on the fertilizer with a drill.

In trimming orchards we always keep the center of the trees open to let in light and air, and always see that no two limbs will lie together and rub, as they will soon rub off the bark and ruin the limbs. We keep the limbs as low to the ground as possible, as low limbs will not break as easily as high ones, and will bear nicer fruit.

F. E. S., Grafton, O.—In my young orchard I begin the yearly cultivation by plowing the ground as soon as possible, depending upon what I have to plow under; if a cover crop, then I let the crop get to the best stage for turning before plowing. The ground is immediately rolled down and harrowed as soon as plowed. Frequent cultivation is then kept up until time to plant a crop such as potatoes, sweet corn, soy beans, tomatoes, etc. These are cultivated frequently until about Aug. 1st, when a cover crop is sown in everything but potatoes, and rye is sown here as soon as the potatoes are harvested. By following the foregoing plan in my young orchard I have been able to get satisfactory growth and a crop of fruit in 4 to 8 years from time of planting, depending upon the variety planted.

If any of the trees are a little tardy in growth I fertilize with nitrate of soda, 1 to 5 pounds to the tree, applying same in April or May, and also mulch the tree with barnyard manure, covering the ground a little beyond the

spread of the limbs. For older bearing orchard practice the sod mulch system, mowing the grass and leaving it upon the ground; also give the ground a coat of barnyard manure once in two or three years and in addition all stalks, weeds, etc., are thrown under the trees and left to decay there. Have not noticed any advantage in commercial fertilizer in my orchard when the foregoing plan is followed, although I have used 5 to 10 pounds of nitrate of soda to the tree, also 10 to 25 pounds of bone meal and acid phosphate to the tree.

My experience in spraying extends over a period of 12 to 15 years, and exemplifies a steady growth from the bucket pump to the power sprayer, including barrel sprayers of all descriptions, and I find that in order to obtain the best results the spray must be applied in the form of a coarse mist under a pressure of 175 to 250 pounds, the higher the pressure and the more uniform it is the better the results will be. I aim to make four applications of spray in a season, commencing with the dormant spray, consisting of 1 gallon of lime-sulphur to 7 gallons of water, making the application as near the time of the swelling of the buds as I can without injury to them, and endeavoring to thoroughly cover every twig, and the ground under the tree. The second application is made as soon as the blossoms fall and before the calyx closes up, using 1 gallon of commercial lime-sulphur to 40 gallons of water and 2 pounds of arsenate of lead paste to 40 gallons of water, also 1 pint of sulphate of nicotine to 100 gallons of water if aphides or plant lice seem to be present. Apply above in a fine mist from all parts of the foliage and fruit are coated with the poison, as upon the thoroughness of this application depends the success or failure of spraying for the season. The third application is made in from 10 to 14 days after the second, and same ingredients are used. This is in hatching, and also curculio if any are present. The fourth application is made in this section, northern Ohio, between the 10th and 20th of July, and consists of either lime-sulphur solution or Bordeaux in connection with arsenate of lead as in previous applications, leaving out the nicotine this time. My experience in spraying fruit is, the more thoroughly it is done the less trouble it is to sell the fruit when ready for market. In marketing the fruit it depends upon the quantity there is in the vicinity of my home markets. If the crop is light I cater to the retail trade or wholesale grocers, and in a year of abundance, such as the past season was, then I try to sell to a large wholesale house for a set price, f. o. b. loading station. I am also developing a high class mail order trade and am succeeding very well along this line. In a word, fruit that is well grown is half sold.

J. S. F., Lakemont, N. Y.—This orchard was set in the spring of 1910. The ground had been covered with barnyard manure and plowed under early. After setting the orchard early in May the ground between the trees was planted to potatoes and well cultivated, thus insuring the cultivation of the trees. The trees were also hoed around by hand. The second year potatoes were again planted, but crosswise of the first year, and likewise for the following years.

This year the trees were given a spraying with lime-sulphur while dormant. The third year the ground between trees was planted to beans. When the beans were pulled with a bean harrow the land was left in good condition. It was harrowed and one bushel of rye sown broadcast and harrowed in. The fourth year was the rest year for the land. Clover seed was sown early in the spring. Nothing was mowed before heading out and the rye and clover, as they grew later, were mowed at

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every month

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least three times through the season, all going back to the land.

The fifth year the land was again planted to potatoes, as it also was again the sixth year. The seventh year the land will again go into beans and be sown to rye to be followed with clover seed in the spring following and a rest year as before, with fertilization of the green crop left on the ground. It should be noted that when the clover is plowed under that there will be considerable growth if not plowed too early.

Little spraying has been done so far, on account of the land being worked by a tenant, and difficulty in hiring it done. Hereafter we intend to spray at least twice per season.

The crops raised so far have more than paid the cost of orchard and interest on land and investment. The trees have made a fine growth, and this fall (1915) some trees had over 20 apples on. The trees were one year old when set. The permanent trees were set 40 feet apart, with fillers diagonally between them; thus each tree is a little over 28 feet from every other tree. The cultivation of rows, therefore, is diagonal. The bearing orchard we intend to spray with lime-sulphur when dormant, winter strength, and as blossoms fall by adding 3 pounds of arsenate of lead to the lime-sulphur diluted with 40 parts of water. The fruit is drawn 11 miles to a city of 200,000 population.

R. D. D., New Galilee, Pa.—About 8 or 10 years ago we bought some apple, peach, pear and cherry trees and set them out in the spring. For three or four seasons we cultivated our orchard about one acre, in hoed crops, such as corn, potatoes, beans, etc. When cultivating the orchard it received a coat of barnyard manure every other year; we then sowed it down to wheat, seeding to timothy and clover; the clover being a good catch, we have cut a crop of mixed hay every summer since seeding the land to timothy and clover. The last five winters we have spread barnyard manure all over the orchard, which has made the apple, pear and cherry trees grow and take on a healthy dark green

color. The peach trees are about all dead.

I began to spray three years ago for San Jose scale and codling moth. If I had begun two years sooner I would have saved the peach trees. I bought a barrel spray pump with a 2½-inch air chamber, which is too small, and 35 feet of ½-inch hose and a 9-foot extension rod; a bamboo rod would be easier handled. Have an aluminum nozzle with a quarter turn, on the end of my extension rod. I prefer aluminum, it being lighter and just as serviceable. I spray every spring for San Jose scale, just before the buds swell out. Test the lime-sulphur with a hydrometer, which can be bought for about a dollar, so as to be sure and get it the right strength. Scale is very hard to get rid of, on account of its multiplying so rapidly. I spray for codling moth just as the petals begin to drop. This is where you need lots of good air pressure to blow the fine mist right into the little blossoms. In spraying for codling moth I put the pump in the barrel, put in about 3 pounds of arsenate of lead to 50 gallons of water, and in this mixture I put 1½ gallons of lime-sulphur; place barrel in a high-wheeled wagon before filling with water, and drive wherever needed. It requires one man to pump and drive and one man to handle the extension rod and do the spraying. Spray two or three times for the moth, two or three weeks apart, and you will have fine fruit. This is for apples and pears; so far I have had no need of spraying the cherry trees, except for San Jose scale. My pump, barrel, hose, rod, nozzle, etc., have cost me about \$15, but they would cost more if bought now.

Our fruit is marketed at a small town 2½ miles away. We sometimes sell to stores and some to private families. We get about 10 to 20 cents more per bushel when we deliver to private families. Haul to town in a spring wagon in bushel crates. Be careful when you put in your crates. If you say you have first-class apples to sell be sure you have them. Be a man of your word and you will have no trouble selling. This is my experience in handling a small orchard.

The Women's Exchange.

This is the farm women's own department—for them and by them. It is devoted to the discussion of topics of everyday interest to the women of the farm family. The Practical Farmer invites—and expects—you not only to write your experiences on the topics under discussion, but also to propose topics for future discussion. The best letter published herein each issue will be awarded a prize of one dollar, and for each other letter published we will pay fifty cents. Address:

WOMEN'S DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

FEBRUARY 1.—Tell of the Different Ways You Prepare Ham, Bacon and Sausage for the Table.

FEBRUARY 15.—Tell in Detail How You Handle Your Flock When Once They Start to Lay. Do You Keep Pullets Only, or Hens as Well? When Do You Dispose of the Male Birds?

MARCH 1.—Tell of the Plans You Have for Making the Home Garden This Year. Describe in Detail the Methods Employed to Secure a Succession of Fresh Vegetables from Spring Until Frost.

All contributions to the Exchange must reach us at least 15 days before the date of issue in which the topic is to be discussed.

Give Your Experience in Raising Small Fruits and Berries. If Grown for Sale, Tell How You Find a Market for Them. Tell of Any Experience You Have Had in Canning Them for the Market.

Mrs. J. W. P., Port Jervis, N. Y.—The strawberry is the only berry that we have raised to any great extent. We generally plan to set out from one-half to one acre of plants each spring. Our soil, which is light and sandy, is well adapted to the raising of strawberries. If possible, we choose a field that has been under clean cultivation for several years, which gives us less trouble from weeds. As soon as the ground can be worked in the spring it is plowed and harrowed thoroughly until the soil is fine and not too loose. The rows are marked out 4 feet apart and the plants are set about 2 feet apart in the row, varying according to the vine growth of the different varieties. We find that the easiest and quickest way to set the plants is for one man to go along with a round-pointed shovel and open the holes while a boy inserts the roots of the

plants. The man with the shovel then pulls out the shovel and presses the dirt firmly around the roots with his foot. The plants are dug from the old bed and well trimmed of old leaves and runners just before we are ready to re-set them. We usually have them all set out by the middle of April.

They are cultivated and hoed frequently to keep down the weeds and to prevent the evaporation of the water from the soil. Blossoms are pulled off whenever seen and the runners also until about the first of July, after which they are permitted to grow.

Some plant their berries in the fall, but we greatly prefer to have them set out in the spring. This gives them a chance to form a good growth of vines, and yields a much larger crop of berries the first season. We set every third row to a self-pollinating berry. We obtain the best results from medium late berries, the late frosts preventing any great success from the early varieties.

When the last picking of berries is finished the field is mowed and everything raked off. This prevents the ripening of weed seeds and makes it easier for recultivation. The bed is then cultivated several times and all the weeds cut out from the rows with a sharp-pointed hoe. In the fall as soon as it freezes up the berries are covered with a thick layer of straw, which protects them from getting so sandy. This straw is pulled from the plants and spread between the rows in the spring as soon as it begins to thaw.

A good application of fertilizer in the spring makes the berries larger and yields a larger crop. The field is plowed after two pickings, for we believe that

Why Not Produce More From Your Soil?

Tankage and Oilmeal are used to supplement and balance home-grown animal food stuffs. The result is quicker growth, earlier maturity, better gains and more profit from live stock.

FERTILIZERS are used to supplement and balance Nature's Fertility. They produce quicker crop growth, earlier maturity, better quality, greater quantity and more PROFIT. By using Concentrated foods, you make farm feeds more valuable. By using concentrated Plantfood, you make soils more productive and more profitable.

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Millions of Apple TREES—Millions of Peach TREES
We have 2,500 acres of hardy, well-rooted and vigorous trees, budded from the best of heavy-bearing orchard trees. All stock grown under personal direction of Orlando and Geo. A. Harrison, backed by 25 years' experience. You take no chances when you buy "Harrison Quality." **Harrison's Nurseries, Box 34, Berlin, Md.**

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BEATS Electric or Gasoline
SEND NO MONEY CHARGES PREPAID
We don't ask you to pay a cent until you have used this wonderful modern light in your own home ten days—we even pay transportation charges. You may return it at any time if you are not perfectly satisfied after putting it to every possible test. 10 nights. You can't possibly lose a cent. We want to prove to you that it makes an ordinary kerosene lamp a beautiful, efficient, clean, safe, steady light and is a real money-saver. **Burns 50 Hours on One Gallon** Common kerosene, and gives more than twice as much light as the best round pink open flame lamp. No smoke, no odor, no noise, clean, no soot, no waste, no danger. Several sizes. Light and is already enjoying this powerful, white, steady light, nearest to sunlight. It's GUARANTEED.

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We have the ALABAMA on our very best plan. No previous experience necessary. Practically every farm home and small town home will buy after trying. One farmer who had never sold anything in his life sold 100 acres of land in 10 days. I don't want to brag but I can tell you that thousands who are buying money-making rigs and autos are doing so because of the ALABAMA. Thousands who are buying money-making rigs and autos are doing so because of the ALABAMA. Thousands who are buying money-making rigs and autos are doing so because of the ALABAMA. **MARTIN LAMP COMPANY, 1150 Alameda Bldg., Chicago, New York, Cincinnati, St. Louis, Montreal or Winnipeg, Canada.**

SUGAR 25 lbs 98¢

25 lbs. best Granulated Cane Sugar for 98¢ when ordered, with other money-saving Larkin Groceries, such as flour, coffee, tea, canned vegetables, dried vegetables, ham, bacon, fish, cereals, crackers, preserved fruits, raisins, confectionery, laundry and toilet supplies of all kinds.

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Send a letter or postal today for your free copy. Just say "and me free a copy of your Grocery Book No. 1042." **Larkin Co., BUFFALO, N.Y.**

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Every farmer and fruit grower should have a copy. Learn what Northern grown trees will do in your orchard. Backs to the fruit grower and is guaranteed. Send for this **1916 Orchard Catalog** of our own-grown apple, peach, pear, plum, cherry and quince trees. Also small trees, ornamentals and shrubs. All well-rooted, clean and thrifty. Large, firm texture, hardy, and vigorous. Explains our Service department. Gives planting directions, plans for farm or suburban garden, etc. Write for your copy today.

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Three earliest vegetables in cultivation for 1916. One packet each, Robinson's Earliest Tomato, Earliest Round Red Radish, Earliest Lettuce. 10¢ to new customers. Regular price 25¢. CATALOG FREE. **C. H. Robinson & Co., Dept. 22, Baltimore, Md.**

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Write for Kalamazoo catalogue showing 500 styles and sizes of dresses and trunks—none better made—cash or your payment—30 days' trial—\$60 day's approval test—\$100,000 guarantee. We pay freight and ship inside 24 hrs. Mon., Tues., Sat. Serv. No. 254. **Kalamazoo Dress Co., Kalamazoo, Mich.**

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Just write me a post-card with your name and address and I'll send you my big new 1916 catalogue of all the latest styles of money-saving, price-splitting, money-saving goods. I'll give you a low price on everything you want. Remember, I give—

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and guarantee every rig for two years. Split Hickory 39¢. Write for your free copy. We have a big stock of new styles and sizes. Write for free copy. You can save. Address **W. C. Phillips, P.O. Box 100, Danville, N.Y.**

SPLIT HICKORY 39¢

it is cheaper to set out a new patch. We have always found a ready market for the berries in the nearby city, except in the rush of the season. Then we have found it profitable to can them. We also can the smaller ones, which do not sell so readily. They are put up in one and two-quart jars, and kept until winter, when we find no difficulty in disposing of them to private customers at a good price, which nets us quite a little profit.

Mrs. J. U., La Fargeville, N. Y.—One man in this vicinity realized nearly \$800 an acre, approximately, from a field of Red Columbia raspberries. This field was 37 rods square and from 6 to 8 years old. About 1200 quarts of fruit were picked in a single season. None of them were sold for less than 15 cents per quart. The farm being located 4 miles from any railroad the fruit was disposed of to individuals or to the small village 4 miles away.

The soil on this farm is a sandy loam. The ground was spaded and covered with well rotted stable manure when the bed was first set out with plants from a reliable nursery. Holes were dug 6 inches deep, manure placed in the bottom, a little loam placed over this and the plant set, with the root proper just under the soil. This was done in the early spring. In the fall the shoots were

laid over in rows and covered with dirt. Plants were set 4 feet apart in the rows and 6 feet between rows. After a year or so a pruning fork was used to take out old stalks, cutting them at the ground. Stakes were driven in the ground and a leather strap with a buckle on was placed around the bush to hold it while binding twine was tied around to hold each bush in place. In the fall straw was put between the rows and around the stalks and is left there in the spring, as it helps to keep the fruit clean. Large berry crates holding 60 quarts each were used to carry the fruit each day to the village.

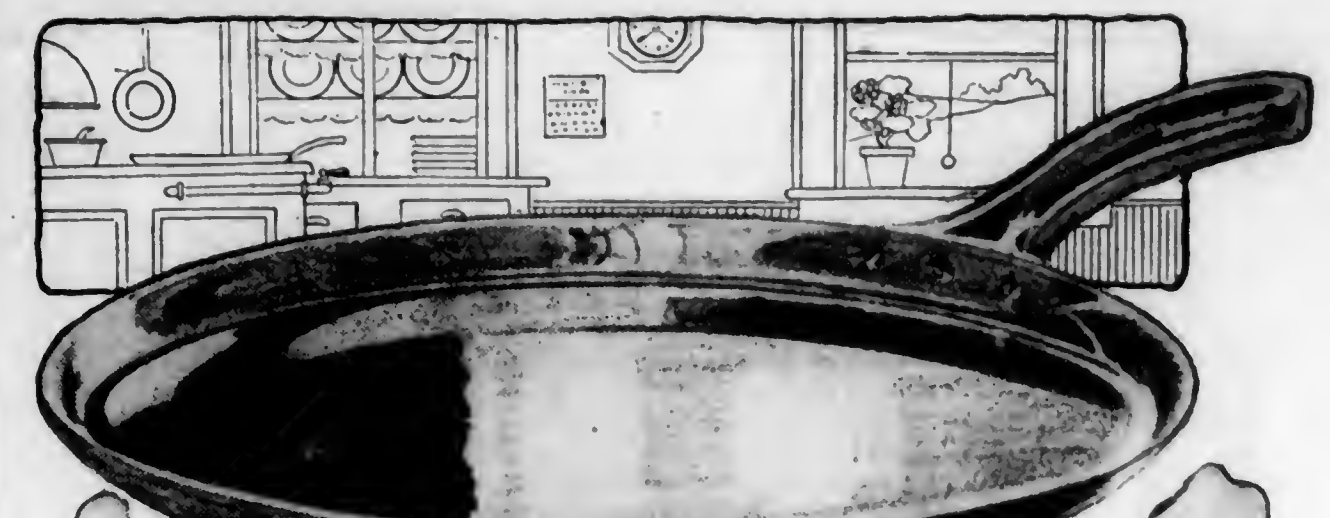
Mrs. M. B. M., Pine Bush, N. Y.—I raise some fruit and berries, both for home use and for sale. I try to keep the sod turned up around them, giving them some manure or fertilizer and plenty of ashes. I can find ready sale to a neighbor, or in our nearby village. I have made quite a good deal of current jelly and have sold it through my husband to hotels, also to a grocer, and sometimes an acquaintance, at a pretty good price. I sold apples this year to a neighbor for a friend, for \$3 a barrel, and sent some to the New York State Foods and Market Dept., and received \$3 per barrel, but the expenses had to come out of that price.

Our Fashions and Patterns

In order that our readers may be able to keep in touch with the most practical styles for ladies, misses, and children, we have made arrangements to supply our readers with perfect fitting, seam allowing patterns at the price of 10 cents each, postage prepaid. Full directions for making, as well as the quantity of material required, accompany each pattern. When ordering all you have to do is to write your name and address in full, let us know the number and size of each pattern you want, and send 10 cents for each number. Address all orders to **FASHION DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.**



7354.—Ladies' waist. Cut in sizes 34 to 42 inches bust measure. The waist may be made all of plain material or of figured and plain goods.
7345.—Boys' dress. Cut in sizes 1, 2 and 3 years. The dress closes at the front and may have long or short sleeves.
7526.—Girls' coat. Cut in sizes 4, 6, 8, 10 and 12 years. Serge, cheviot or broadcloth can be used to make this coat.
7370.—Girls' dress. Cut in sizes 6, 8, 10, 12 and 14 years. This dress has a plain blouse and two-piece skirt.
7504.—Ladies' shirtwaist. Cut in sizes 34 to 42 inches bust measure. Linen, madras or messaline can be used for this waist with the collar and cuffs of contrasting material.
7494.—Ladies' dress. Cut in sizes 32 to 42 inches bust measure. The dress closes at the front and has a five-gored skirt.
7521.—Ladies' skirt. Cut in sizes 22 to 32 inches waist measure. The skirt is cut in three gores and has an applied yoke.
7299.—Ladies' dress. Cut in sizes 34 to 44 inches bust measure. Any of the pretty flowered materials can be used to make this dress.
7297.—Ladies' skirt. Cut in sizes 22 to 32 inches waist measure. The skirt has two gores and inserted side sections.
7502.—Misses' dress. Cut in sizes 14, 16, 18 and 20 years. The dress has a three-gored skirt which may be made with high or regulation waist line.



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FOUR hours of breakfasting from New York to San Francisco—and gold on brown Karo being poured thick over tempting hot cakes every minute. The nation's breakfast—Karo on cakes, waffles, corn-bread and hot biscuits—in many thousands of homes, day after day. American women have also found out how Karo helps in making delicious pastries, puddings, candy—and jams and preserves that will not crystallize. Scores of welcome recipes in the free Karo Products Cook Book—send for it.

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BABBITT'S PURE LYE
In the New Can with the Sifting-Pry-Off-Top

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Here
she is!



Here's
YOUR
pony!

Her
Name is
"Blossom"

We also send a
Buggy, Harness,
Saddle and Bridle

If YOU want to get this pony FREE
send us YOUR name today--TODAY

Here is the greatest free
pony offer to boys and girls that "The
Farmer's Wife" has ever made, and
the prettiest pony we ever had to give.

Maybe the lucky winners who have won our 342
other ponies won't agree with this—but here's
"BLOSSOM" to speak for herself. We leave it to you
if she isn't a dandy; and she's going to be yours,
free, the handsomest little pony in the world, gentle
and kind, with complete outfit (buggy, harness, saddle
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Professor of Animal Husbandry, Pennsylvania State College

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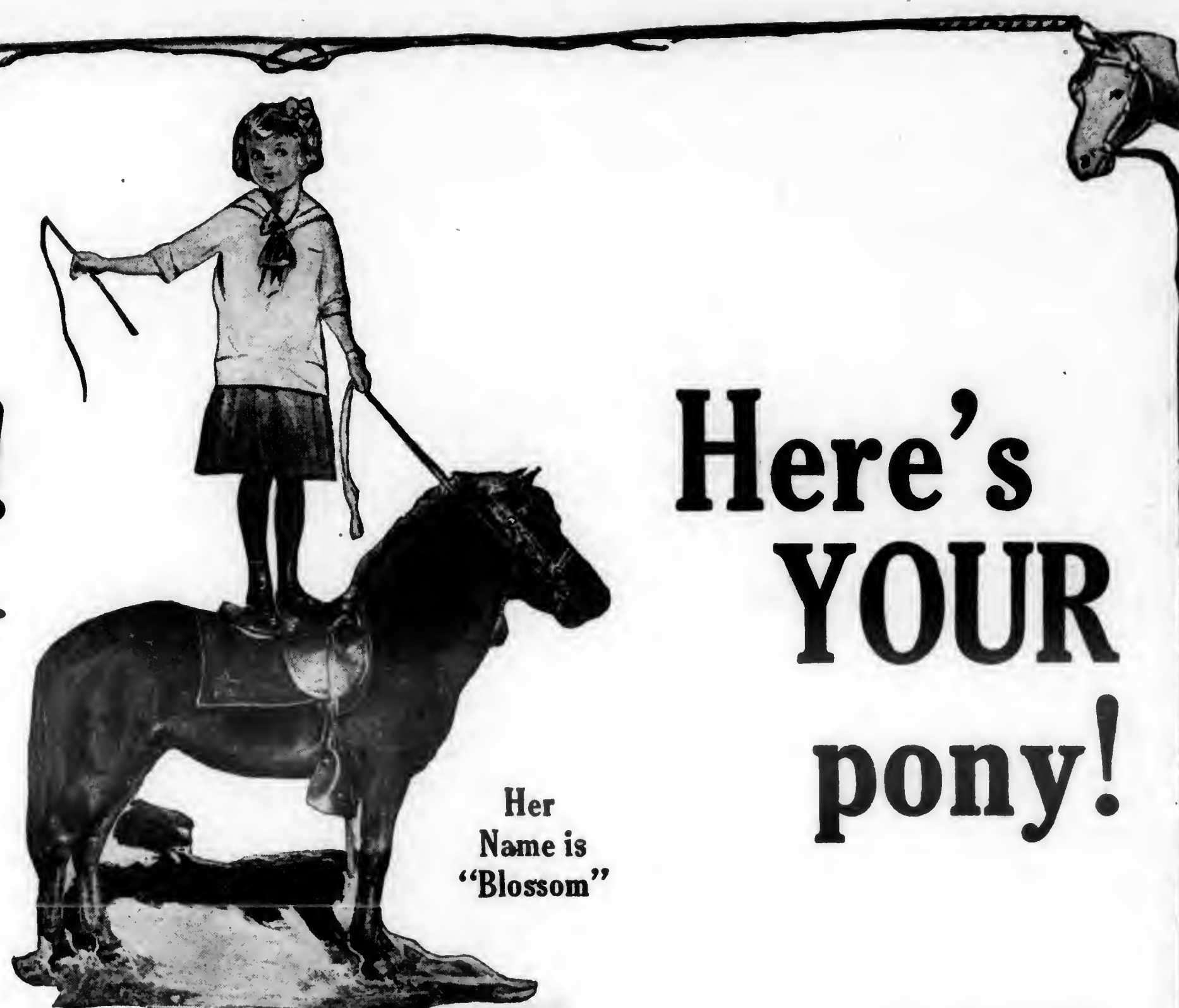
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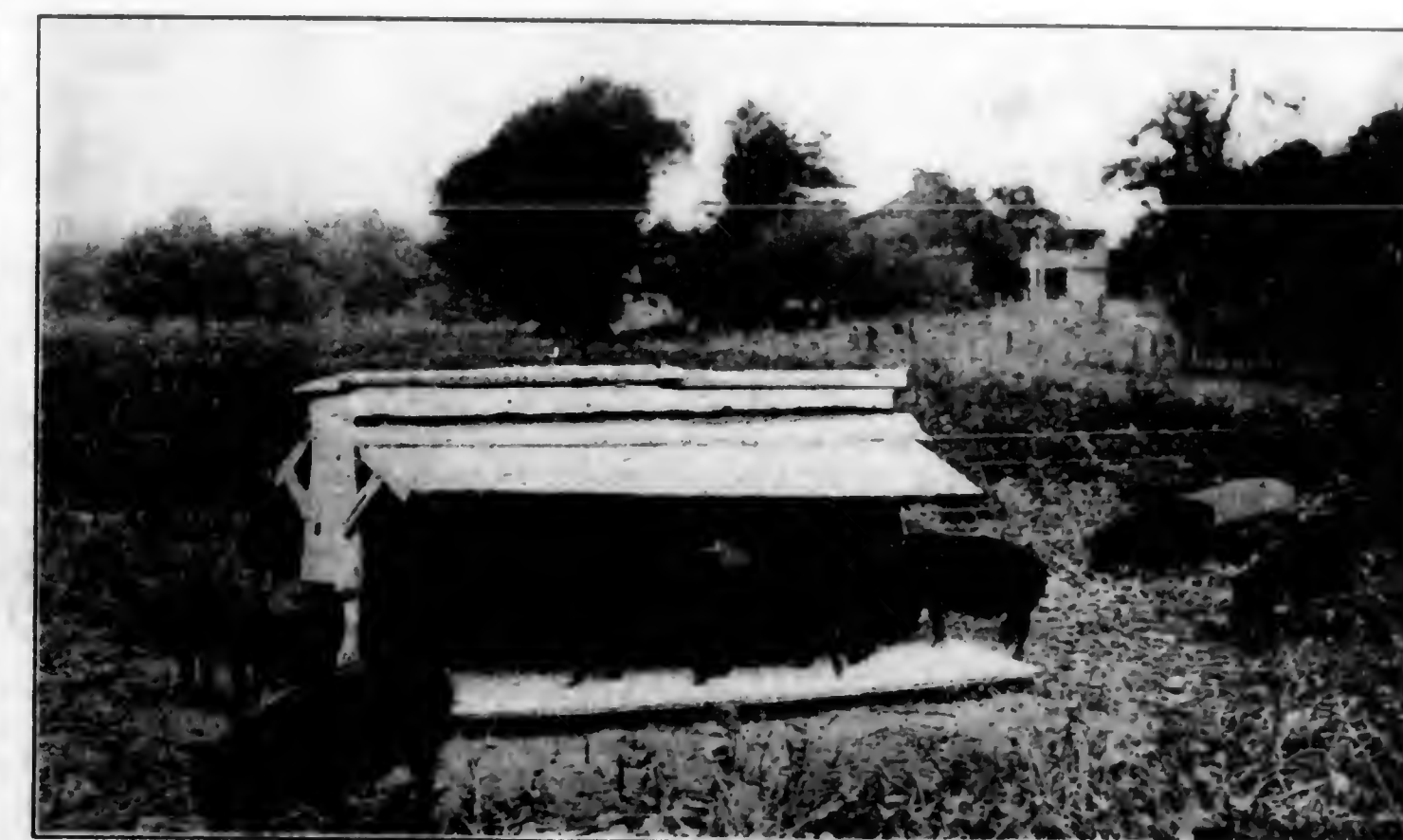
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WE call the attention of our readers to the first of these two
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FEBRUARY 1, 1916

"Energy"

A PROMINENT scientist in attempting a definition
is quoted as saying: "Energy is the capacity for
doing work." We think this ought to apply to our
folks very strongly, as we know of no class of people
who have a greater capacity for work—energy—
than the farmers.

It takes energy, and lots of it, too, to run a farm,
and not only that, but perseverance must be coupled
with it, too. If some of our city friends don't think
farmers work, let them try farming for a season and
see for themselves.

When we exert this energy in the capacity of work
we use up much power and must necessarily draw on
our brain and muscle to keep this energy up to its
highest efficiency. This is a tax on our bodies as well
as our brain, and before we expend this energy we
want to be sure we are right.

Misplaced energy is something to be avoided at all
costs. We may work hard in fitting a field for corn,
and cultivate it diligently all summer, but if the seed
is poor—no attention given to its selection—and the
soil depleted—plant food wants not taken into con-
sideration—we can expect but small returns. We may
feed a cow all winter and give her the best of care,
but if our energy—work—is not coupled with the
scale and Babcock test, we stand liable to fall again.

To be successful we must have an endless amount
of energy, but it must be energy in the right direc-
tion; in other words, it must be well placed. When
we work hard an ultimate idea should be in mind,
and as we expend our energy we owe it to ourselves
to get some returns for every ounce so expended.

To place our energy in the right direction calls for
common sense and thoughtful study and we firmly be-
lieve most of our folks are blessed with the former
and spend much time in the latter. We work too
hard for what we get to lose anything, so it behooves
us to plan our work in an intelligent manner, then
go to it with all the energy we possess.

The Importance of the Sire

THAT the sire is half the herd is an old saying,
and it contains a truth of almost untold value.
There are scarcely any farmers who can afford to
purchase outright a pure-bred herd of cattle, but there
are very few farmers who cannot afford to purchase
a pure-bred sire or purchase one in conjunction with
three or four of their neighbors.

When one stops to think that the calf from a grade
cow and pure-bred bull is 50 per cent. pure, and the
progeny of this calf in turn crossed with a pure-bred
is 75 per cent. pure, we begin to realize how entirely

possible it is for us to build up our herds at a small
additional outlay in a comparatively short period
of time.

Breeding is a peculiar thing, and follows no abso-
lutely fixed laws, but in the great majority of cases
the bull transmits to its progeny the characteristics
and milking propensities of his mother. It therefore
stands to reason that the bull to head your herd
should be from a cow with an ability behind her to
produce milk. Conformation, trueness to type, etc.,
all have their importance in picking out a bull, but
his mother's record is the first and foremost point
to be learned. The first cost of a pure-bred bull
is more than a grade bull, but we firmly believe that
no farmer can afford to keep a grade. There is no
room on the farm for the scrub. The danger from
breeding from a grade bull, even 75 per cent. pure,
lies in the fact that his progeny are just as liable
to revert to the type of his scrub ancestors; possibly
more so, than they are to take after the side of the
house that is pure-bred. Using a grade sire is a risk
that the farmer cannot afford to run.

If you haven't enough cows to keep a pure-bred
bull, did you ever think of joining with two or three
of your neighbors and purchasing one for your joint
use? If you haven't a pure-bred bull to head your
herd, don't leave a stone unturned until you have one.
Remembering that like begets like, an infallible rule
to always follow is: "Breed from the best." It pays.

Paying the Piper Now

WE agree with the President that in preparing
the Nation against war, we should pay spot cash
for the operation. The preparedness of today, as far
as naval and military armament is concerned, is the
junk of tomorrow. It always goes against the grain
to pay for a dead horse.

In providing the ways and means for properly pre-
paring the Nation for the possibilities of the future,
care should be taken that the financial burden should
be equitably distributed, so that it should fall equally
on all in proportion to their ability to pay the piper.

Take the income tax, for instance: A person with
an income of, say, \$2000 a year, might with justice
be required to pay \$20 or \$30 to the fund for common
defense. The person with a \$50,000 income might
with equal justice pay a quarter of it for the same
purpose, without suffering the pangs of poverty, while
the fortunate possessor of a million a year could, and
perhaps should, contribute half or more of it, and at
the same time, be amply able to keep the wolf, or a
whole pack of wolves, from the door. We can im-
agine the anguish with which the million-dollar man
would part from so large a portion of his superfluous
income, but he would not be making so great a sacri-
fice as his two-thousand-dollar-a-year brother.

Another thing, too! Wars are largely promoted by
wealth and class. They seldom originate from the
proletariate, but the latter are largely egged on by
those of means and influence, who stand in the back-
ground and put the common mortals in the front of
both financial expenditure and physical effort. If
those of large fortunes knew that war meant the con-
fiscation of a very large portion of their wealth, as
well as the imminent danger of losing life, the dove
of peace would soon be hatched, whereas the hatch-
ing is still far in the future.

Preparedness is sometimes provocative of war. We
think it might be made a real prevention of war.

Reducing the Freight

IF the problem was worked out correctly, we believe
it would be found that the cost of hauling the
produce of the farm to the nearest market point
forms no inconsiderable portion of the cost of produc-
tion. Without doubt the cost has been considerably
reduced from what it used to be when roads were
poorer and possible marketing points less numerous,
but the fact remains that it still costs too much to
carry the product of the average farm to its nearest
market.

That is the main reason why we favor the improve-
ment of the common dirt roads, which, after all, are
the main standby, the only means, in fact, of com-
munication of the majority of farmers. And that is
also why we think it is a mistaken policy to switch
national and state highway aid on the construction of
high priced highways between central points and
leave the dirt roads which radiate from such central
points to the slender means of the rural communi-
ties through which they pass.

The greatest good to the greatest number means,
in the long run, the greatest good to the whole num-
ber. (Good roads from the farms to the nearest mar-
keting points, whether railroad center, trolley station
or a market town, in the final analysis means lower
prices to the consumer and a better return to the
producer.) The cost of transportation of farm
products after they reach their marketing points, has
been largely reduced of late years, and the cost of
getting them to their marketing points has also been
reduced, but in a lesser proportion. The good roads
agitation will reduce this latter item much faster and
much more, if the improvement of the common roads
is the chief end and aim of the agitation.

Our Live Stock and Dairy Number

JUDGING by the number of articles we receive from
our readers, we believe there is no farm subject
in which more interest is evidenced than in live stock
and the dairy. Every farmer is interested in one
kind of stock or another, and the golden butter is
often the pride of the busy housewife. We feel that
when we announce that our issue of March 15th will
be our Annual Live Stock and Dairy Number, there
will scarcely be one but that will be greatly pleased
and look forward to this issue.

As has been our custom in the past, we offer four
prizes for the best articles published, as follows:

First prize	\$15.00
Second prize	10.00
Third prize	8.00
Fourth prize	5.00

All contributions for this number must be in our
hands not later than the 21st of February, and as
much earlier as possible. We invite you all to con-
tribute your experience for this number, touching on
any phase of this great industry that interests you
the most. Select your subject and write your article
at once. We cordially invite you to accept our offer
and join with us in making this number brimful of
practical information.

Garden and Truck Special

IN our Jan. 1st issue, on page 4, we announced that
our issue of March 1st would be largely devoted to
Garden and Truck subjects, and details, including
prizes, etc., were given.

If you have not already done so, we hope you are
planning to contribute and trust we may receive
your story very soon. Write on any subject in this
line that you may choose, and tell what you have done.

Our Foreign Markets

DURING the year that has just closed Europe pur-
chased food supplies in the United States to the
extent of nearly one billion dollars. This stupendous
amount of food went largely to the warring countries
who look to us for much of their needs.

According to present indications the 1916 European
food bill with us will be as large, if not larger, than
the past year, as the drain on the countries at war
can hardly be conceived. We therefore will be called
upon again for immense quantities of food supplies,
so we should redouble our efforts to make every acre
produce its maximum yield.

Bulletin Helps for Farmers

The farmer who wishes to sell his products by par-
cel post, and the housewife who wishes to use this
method of securing country produce for her table,
will find many useful points in Farmers' Bulletin
703, issued by the U. S. Dept. of Agriculture, Wash-
ington, D. C., "Suggestions for Parcel Post Market-
ing." This bulletin, in addition to explaining the
postal rates and measurement limits for parcel post
matter, discusses in some detail types of containers
which are most successful and the methods of grading
and packing produce, so that it will reach the con-
sumer in good condition, and be attractive in quality
and appearance. In treating standards for parcel
post shipments, the bulletin tells how to select, handle
and pack poultry, and how to grade and pack the
various fruits and vegetables which the average
farmer is likely to market through the post office,
and many other important items.

"Milk and Eggs" is the title of the September Ex-
tension Bulletin issued by the New Jersey State Agri-
cultural College at New Brunswick, N. J.

Apples at Auction in New York State

By GEORGE T. POWELL

New York State has established a de-
partment of Foods and Markets, and
during the past year has inaugurated a
system of selling fruit by auction. Dur-
ing 1915 the legislature enacted a law,
regulating the sale of apples in closed
packages, specifying certain grades and
wording, as "New York Standard Fancy
Grade," "New York Standard A Grade,"
"New York Standard B Grade," which
allows 5, 10 and 15 per cent. for cer-
tain defects in the different grades.

As in all new departures in methods
of transacting business, the inaugura-
tion of the auction plan of selling has
been accompanied with more or less of
difficulties. A large number of farmers
look upon their apple orchards as of
secondary interest in their farming, and
therefore do not give the same care in
cultivation, pruning, spraying and pack-
ing as do those who make fruit growing
a special feature of their work.

The apples from neglected orchards
are very largely inferior in quality,
with which markets are always over-
stocked. Of this lower grade the auction
has received much the larger quantity,
which has sold, as it always does, for
low prices, while all good apples have
made satisfactory returns.

We have shipped carloads of apples
to both the auction salesroom and to our
commission salesman, that have a line
of customers who in past years have
bought our fruit, and whom we did not
want to disappoint. The sales from
both sources have been satisfactory, but
the auctions sales have returned more
value, because the expenses of selling
were less. The commission for selling
by auction is 5 per cent, with no charge
for cartage, a small charge made for
cataloging and for moving cars at the
terminal, where buyers may examine the
fruit. The commission men charge 10
per cent. for selling and from 5 to 8
cents a barrel for cartage, and 5 cents
for bushel hampers or baskets.

In early October we had sold at
auction a carload of 194 barrels of all
three grades, from a minimum size of
2 1/4 inches up to 3 inches, which brought
\$615.80. Varieties were mainly Green-
ings and McIntosh, the range of prices
being, for Greenings, 2 1/4 minimum (a
size we seldom pack), \$2.05 up to \$3 for
3-inch A grade; and for McIntosh A
grade 2 1/4-inch minimum \$2.20 to \$4.15
for A grade 3-inch. In a later sale of
Greenings the auction returned \$3 per
barrel for best A grade, and the same
price was returned for the same grade,
out of the same lot, in the same market,
New York, by our commission man. In
the same sale by auction ungraded
apples sold for \$2 to \$2.58 per barrel.

The principle of selling fruit by
auction is a correct one, for in an open
public sale the real value is obtained.
Buyers know what they want and in
competitive buying the real value is ob-
tained, while a standard of value is es-
tablished. Under the present law many
farmers shipped their apples branded
"ungraded," as they felt they could not
grade as the law required, there being
a penalty attached. Inspectors, in some
instances, were not sure of their judg-
ment, with the result that the market
at times was demoralized with apples
not properly graded.

The auction handling, in common with
the commission men, is seriously handi-
capped by the inadequate facilities that
exist for the expeditious movement of
produce on arrival. Daily, enormous
quantities are dumped upon docks and
railroad platforms, where for hours
predominant reigns in efforts to move

them, and much unnecessary cost is ad-
ded to selling for the reason that cities
have not kept up with the growth of
population in furnishing market faci-
lities.

There has been much opposition to the
auction selling, by the commission men,
too many of whom are dealers. We do
not believe that the commission man is
an uneconomical factor in selling farm
produce. We do believe he is a neces-
sary agent in distribution. He not only
assumes personal responsibility in sell-
ing, but from the neglect of the city to
provide better facilities for handling the
produce business he is put to much un-
necessary cost, which the producer and
the consumer have to bear. There is a
question whether the commission man
can carry on his business under present
conditions on a 10 per cent. commission.
There are too many in the business, as
there are also too many retailers in
the distribution to consumers. The mov-
able, irresponsible sidewalk dealer, who
for a time gets business, then cuts prices
and disappears without paying the ship-
pers for the produce he has sold, brings
disrepute upon the good class of men
in the business.

One reason why growers of apples like
auction selling is that they know they
are getting the full value of their sales.
They do not feel certain of this when
they consign their fruit to a commission
man who is a buyer and becomes a com-
petitive seller on the market. Neither
as a buyer does the producer consider
that he will offer the real value, for it
is against his interest, naturally, as a
buyer to establish a price except upon
the lowest basis.

There should be no reason for ostracis-
ing the commission dealers for their
combined opposition to the auction sys-
tem of selling, for there is room and
business for both. Healthful competition
in business is better than monopolistic
control.

In this problem of marketing one of
the most important factors is the pro-
ducer. The growers of fruit need to
adopt more largely the principle of co-
operation. They need to improve their
methods along several lines; first of all
in obtaining more first-class quality, of
which there is a dearth. They need to
establish central packing houses, where
fruit may be graded and packed by
skilled packers, so that an established
standard of quality and packing may be
had. The day of the individual packing
and selling is past. Good fruit, however,
may be sold at satisfactory prices, as
has been demonstrated the past season,
in our experience, by the auction and
likewise by the commission man.

Ice in Summer

Ice is a commodity which almost every
farmer can have during the summer
months if a little attention is given to
the proper methods of storage at this
time. A common type of ice house, and
one that seems to give good satisfaction,
is a pit dug in the ground or on the side
of a slope, covered with a board roof to
keep out the snow and rain and serve as
a shade. Straw is used between the
walls of the pit and the ice. One in-
stance has been observed where baled
straw was used with good results. In
the construction of any ice house, wheth-
er pit or above the ground, the walls
should be properly insulated so that they
will not admit heat from the outside.
Ventilation should be provided for the
space above the ice by an opening at
each end near the peak of the roof.



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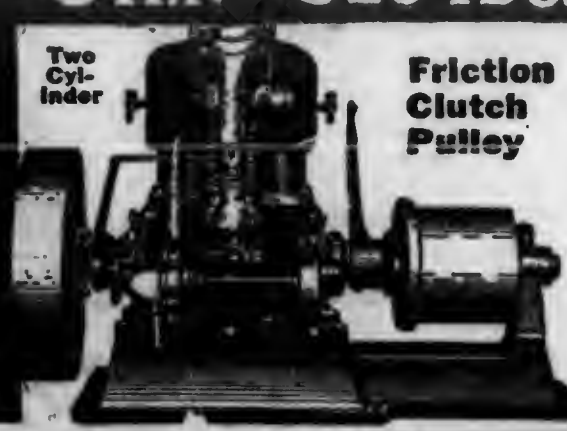
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J. W. JONES & SON, 5092 E. Water Street, Syracuse, N. Y.

Care and Breeding of the Belgian Hare

By F. T. WIBERG

My article on "The Belgian Hare as a Money Maker," in the Nov. 1st issue of The Practical Farmer, brought forward questions from different subscribers as to the raising, marketing and general care of these animals, and having been asked by the Editor to answer them, I take the opportunity to do so.

The Belgian hare, as undoubtedly most of the readers know, is a food furnishing animal of great value because of his prolific qualities, and also on account of the great nutritive value of his meat. Have you ever realized that the meat of the chicken contains the least nutritive value of any meat, and the Belgian hare the most? Dr. A. S. Heath, of New York City, says: "There should be hundreds of thousands of dollars worth of hare meat shipped to our hospitals and sanitariums. For digestibility and nutritive value there is no meat comparable to the hare. If obtainable, hare meat should be prescribed for fever patients, aged and feeble persons, consumptives and anemic patients by physicians."

How am I to start this venture? Where ought I to buy my hares and what kind of an enclosure ought I to make for them? These are questions asked by several subscribers, and I shall try to answer them in as practical a way as possible. Taking for granted, then, that you wish to start raising Belgian hares, the first and most important thing to do is to get first-class stock. You will soon realize that it is nothing but the pure-bred Belgian hare that pays. His meat is superior in quality to that of the mongrel, and if you should wish to sell for breeders you must have the very best to offer. Before ordering your stock from a reliable breeder, have your hutches built. If you have an old outbuilding that you can spare a corner in, or a small hen house not in use, it can be made use of. My hutch house is 70 feet long and houses several hundred hares, and if you enter it on the hottest day of summer you will be surprised to find that it is absolutely free from any odor. This is greatly due to the fact that when the hutches are cleaned out the floor is covered with lime which is rubbed in carefully with a brush, and what is not absorbed is brushed up. Lime is the best disinfectant you can use.

Make your hutches double deck. Use cheap matched boards for both lower and upper hutch floors. Make them 3x5 feet and 2 1/2 to 3 feet high. Divide each hutch by using a 12-inch board near the floor, and above this use chicken wire. Do not use hen wire, as you must be sure of keeping out the rats. Make a frame for your door out of 1x2 strapping, and cover this frame with chicken wire. See that your hutches are not built where

they will be in a draft, but will have good ventilation, and if possible some sun. This, however, is not absolutely necessary. Place a nest box in it, 12 inches high, 16 inches wide and 20 inches long, with a hole 6 inches square in one end, and fill it one-third full of hay. Your hutch is now ready to receive the little family. If you have ordered a trio (two does and one buck), unrelated, you will need three hutches, as the buck must be by himself. When you wish to breed your does, take them to the buck's hutch, and not vice versa. The does will litter 30 days from date of breeding. Wean the young when they are two months old. Let your doe rest one week, when she can be bred again. If properly cared for she is good for five years as a breeder.

Many rules have been given by different breeders as to the feeding of the Belgian hare. Some use wet mash, others dry, others again only whole grain. Some advocate hardly any green stuff, others again say give them all the green they can eat. And so opinions vary, and some hares may die from over-attention and others from want of it. However, the old, common sense way comes nearest to pleasing the hare. We all know that he is a nocturnal animal, consequently he prefers to feed at night. Give him, then, for his supper a good handful of hay; clover hay or alfalfa is the best. See that he has fresh water in a dish, which must be clean. Also a handful of the following mixture: 1 part whole oats, 1 part wheat bran, 1/2 part corn meal and 1/2 part ground oats. Add one handful of salt twice a week. Mix this carefully and feed as directed. This formula was given me by one of the experimental stations here in the East, and I have found that it works well. For the summertime I omit the corn meal. For their breakfast give them one handful of whole oats, fresh water, and to nursing does a carrot. All young weaned stock, and also matured stock not used for breeding get carrots twice a week. For the summer I omit the carrots and give lawn cuttings, or any fresh green stuff out of the garden that I cannot make use of myself. In the season when the green is plentiful I give all my stock some every day. A handful of green for each hare each day is sufficient. This is my way of feeding my hares at present, but I will say that if you can afford to only give them all the fresh and good hay they want each day, and a handful of whole oats in the morning, with an occasional carrot, you can grow as fine hares as you could wish to see. Cleanliness and regular feeding are two essential factors in the raising of the Belgian hares.

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Work for Winter Days

By W. H. ROTHENBERGER

What shall we work today? This is the question which often arises in the mind of the farmer who has a hired man or two in his employ, on a stormy day. The best help wants to hire for the entire year, so it sometimes becomes a problem to keep them profitably employed during the winter months. Of course, this is the time of year when one ought to lead the less strenuous life and get refreshed for the season to come, but it is rather expensive charity to pay for help that brings no returns.

If one acts with wisdom he can find plenty of things to do at such times, some merely adding to the neatness of the place while others may be making permanent improvements or doing work that would otherwise have to be done during the busy season. If one has a wood lot the best time of all to get the wood home is when the ground is covered with snow and the sled can be used, because the wood lot is usually on a hillside or on rocky ground, so the wood can be most conveniently moved at this time.

If it is too blustery to be out of doors there is plenty of work inside. The barn needs a thorough cleaning, which was neglected last summer. The windows need washing and all the cobwebs are to be swept down. There is no excuse for having cobwebs during the winter season. The litter is also all to be taken out of the feeding alleys and the entire inside of the barn to be given a good coat of whitewash, not applied with a hand brush, but with the barrel sprayer which is used to spray the orchard or potatoes. The barn mow has an entirely different appearance. It is so light and smells so sweet and clean that one can consider himself secure from tuberculosis and many other cattle diseases. Of course, during this season the cows are also curried regularly, for now milk is bringing its highest price, so the greatest possible production must be gotten, and cows do respond to good care.

This is also the time to do the carpenter work for which there was no time last summer. New fence gates are made indoors. The cracked plow or fork handle is replaced. Are there any changes that could be made in the barn which would save labor? Do you have to walk the entire length of the barn to the stairs, or carry the hay or feed that distance for every cow? Couldn't one arrange things more conveniently by changing the location of the stairs, the hay funnel or moving a partition? The barn may be dark and the insertion of several windows might improve it wonderfully.

When the outdoor work begins the machines should all be in good shape, so during the winter all knives are ground, all dull plowshares and cultivator teeth are sharpened or replaced, and an extra supply of links to chains, and all parts of machines which are badly worn or liable to break when they are used, are laid in. It is no pleasant experience to have a link of the main drive chain on the grain blower break when you begin cutting, and you have to make a special trip to town or send away for another.

The harness should have attention; should be well oiled and patched where necessary. The seed oats can be gotten ready and the fertilizer mixed for the spring seeding. On nice days the fruit trees can be pruned and sprayed just before the busy season opens, the inventory of crops and stock should be taken and the farm accounts closed. Farming

is a business enterprise, so a complete set of accounts is necessary for the best success.

Fortunate, indeed, is the farmer who can get other work for his men and horses during part of the winter. In some sections there is a demand for teams to haul wood; in others the farm-

ers haul ice and house it for creameries, etc. The thing to be remembered about labor is that if it is idle a good deal there is something wrong with the system, and also that it is better to do something even if it does not bring big returns, than to do nothing.

Pennsylvania.
Mildew is especially injurious on nursery stock, and it may be controlled, according to the New Jersey Experiment

Station, by the regular spray treatment, as recommended in circulars 44 and 45. These circulars may be obtained by sending a request to the New Jersey Agricultural Experiment Station, New Brunswick, N. J.

Don't leave explosives in a field or any place where stock can get at them. Cattle like the taste of the soda and salt-peter, but the other ingredients will make them sick.

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In clearing land the Kirstin way, one man alone pulls stumps—your team driven by a boy can be kept busy dragging them away. Just think of the enormous difference in cost between the Kirstin One-Man way and the horse-power method—where it takes a team and a man or two to operate the puller alone. The improved double leverage Kirstin, the new short lever model, stands the extreme tests of the very hardest stump pulling. The Kirstin's wonderful compound leverage principle develops enormous power—one man alone can easily pull all kinds of stumps—big, little, tough or green—also trees and hedges. In addition to its practically unlimited power, the Kirstin

No other stump puller at any price contains a similar device. With other machines you keep pulling at the same rate of speed even after the stump has broken loose and the hard pull is over. This is a big waste of time that the Kirstin Multiple Speed-Changing feature entirely overcomes. The Quick-Detachable connections also mean a big saving of time. Furthermore, with the Kirstin you can

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No time lost in having to re-set machine for every stump—no

unwinding cables from a heavy drum—no driving a team round and round—no wasted time or effort at all. Just a steady, easy, back-and-forth movement of the Kirstin lever brings stumps out quick and easy. Small trees, hedges, brush, etc., can be pulled in bunches. The Kirstin gives you unlimited power. It also has a surplus strength in every part—and the **right spot** at the right time. Can be used anywhere—hills, swamps—rough ground or thick timber where no other puller could be used.

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or send a postal, but be sure to write at once for your copy of free book.

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Town _____
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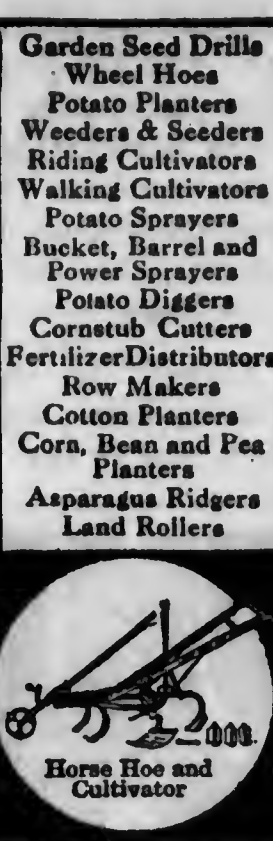
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The Garden

Edited by W. F. MASSEY

Garden Hints for February

In February I sow my seed for a succession of cabbages in summer and early fall. Sow in a cold frame (north of Philadelphia a slight hotbed will be better) seed of the Copenhagen Market Cabbage, Succession and Fottler's Brunswick. These will give a regular succession, the Copenhagen following closely after the fall sown plants, Succession next, and the Brunswick making fine large drum heads in late summer or early September and lasting until the later cabbages are coming into use.

It is a good plan to sow seed of the early tomatoes in any section ten weeks before they can safely be set out in that locality. Here that means about the middle of February. I sow the seed in shallow boxes in the greenhouse, and as soon as the plants are large enough to handle I transplant them into other boxes a little deeper and give them more room. Then by the middle of March here they can be set in the frames 4 inches apart each way to get strong and hardy for setting in late April.

Here in our warm, sandy soil we sow the early varieties of garden peas early in February. The later and finer varieties must be sown later, as the wrinkled peas are apt to rot in the cold ground. For the earliest I sow the Nonpareil, a strain of the Alaska type.

For sweet peas I dig a trench a foot deep and fill it half full of fine rotten manure and cover with soil and sow the seeds and cover level so as to get the roots deep in the ground to stand the later warm weather. It is necessary to get the sweet peas started early if we are to have a good bloom before the hot weather comes. All these things can be done nearly a month later north of Philadelphia.

I have some thousands of plants of the Wonderful lettuce still unhurt outside in the seedbed, and am hoping to get them through the winter for early setting. But February is a good time to sow lettuce seed in a frame to make plants for spring setting. While I use the Big Boston lettuce for heading in the frames I do not use it for spring setting, as it runs to seed too quickly. The Wonderful and the Hanson are the best sorts to set in the open ground in spring, for it takes the heat of June to start these to running up to bloom.

We generally get our early Irish potatoes in by the last of February. The market men all plant the Irish Cobbler, but for home use I still prefer the Early Ohio or Early Rose. Near tobacco or cigar factories tobacco stems can generally be had at a reasonable price, and if these are used liberally in the furrows they will make up for the lack of commercial potash, as they carry 2.35 per cent of nitrogen, 8.20 per cent of potash and a small percentage of phosphoric acid. Then a liberal amount of acid phosphate used in the furrows will make the potatoes. These, too, will go in a month later north of Philadelphia, and mid-March in the Philadelphia upper Delaware section.

Radishes of the Scarlet Turnip type can be sown in heavily enriched soil in a cold frame, and if you like early carots sow some of the French Forcing carots at same time. These are small and sweet and grow about as quickly as a radish.

Do not forget to sow some seed of the Prizetaker and Giant Gibraltar onions in a frame for transplanting later. I sow the seed thinly in rows in the



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Yields as high as 60 bushels of wheat per acre are reported from all parts of the country. The yield of 40 bushels per acre are also reported. Thousands of American farmers have taken part in this wonderful production. Land prices are still low and free homestead lands are easily secured in good localities, convenient to churches, schools, markets, railways, etc. There is no war tax on land and no conscription. Agents for illustrated pamphlet, reduced railroad rates and other information to

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WANTED O. O. MATTSON, 137 Andrus Bldg., Minneapolis, Minn.

Soils & Field Crops

Conducted By A. E. GRANTHAM

Fertilizers for Alfalfa

While it is true that alfalfa takes a good share of its nitrogen from the air under the proper soil conditions, yet the plant feeds rather heavily upon the mineral elements, phosphoric acid and potash. For this reason some provision should be made in preparing the land for alfalfa to furnish these ingredients. On good land that has been well supplied with stable manure during recent years it is doubtful whether much attention need be paid to the application of fertilizers. However, where the soil is not in the best condition as regards fertility, it will be well to apply 500 to 600 pounds per acre of a goods carrying 10 or 12 per cent. of phosphoric acid and 3 to 5 per cent. of potash. Where potash is not available (as at present) the use of a liberal dressing of manure applied to the ground before it is planted to potatoes, and the application of 300 to 400 pounds of acid phosphate when the tubers are removed will put the soil in condition to grow an excellent crop of alfalfa. Manure makes one of the best fertilizers that can be used on alfalfa, but it must be incorporated in the soil some time before seeding, in order that the weed seeds and weeds may be eradicated. This is the purpose of summer fallowing and the use of a clean culture crop ahead of the alfalfa. A good plan to this end would be to manure heavily a piece of sod land for corn. After corn follow with potatoes, which in turn would be followed by alfalfa. This process supplies the soil with organic matter and rid the land of weeds. Since most manure is not well balanced with respect to the proportion of phosphoric acid to the other elements of plant food, the supplementing of the manure by acid phosphate in every case would prove desirable. If commercial fertilizers are used they should be applied a few days before seeding the alfalfa. This is particularly desirable if the fertilizers are spread broadcast on the surface. If a grain drill is used a more even distribution is possible and the material comes in contact with the moist soil at once.

The Seed Corn Situation on the Farm

The midsummer storms, which laid low the corn crop in a large portion of the Eastern States were found, at harvest, to have greatly lessened the yield of corn. Never before in certain districts was there so much soft and unsound corn. On most farms the proportion of sizeable ears was rather small. One large corn grower of my acquaintance who annually produces several hundred bushels of seed corn claims that he never before had such a small stock of good seed as this year. This is much the situation in a large part of the country and growers should take immediate steps to test out the seed ears they have, and if necessary go to the crib and select more ears in order to get a sufficient number to make up the desired amount of tested seed. Take stock at once of your seed corn and if short make inquiries for a supply for next year. In the next issue we shall give full suggestions for testing seed corn.

Queries Answered

Manure on Alfalfa.—J. N. S., Indiana, writes: "How about that warning recently not to spread manure over alfalfa on account of weed seeds? I don't want to be a kicker, but I do not think it good policy to leave off the manure on this account. There are always present in the soil (and floating in the air) sufficient weed seeds to fill the spaces spoken of between the alfalfa crowns,

THE TOWER SYSTEM OF CORN CULTURE

Is employed by most successful Seed Growers. Most prominent among whom ranks THE ZELLER SEED CO., Cooper, Iowa. (Growers of Grand Champion Bushel of Corn exhibited at 1915 World's Fair, San Francisco.) They say: "We use it all the time, wet or dry weather. — We believe the Tower method the only method of cultivation, and will always recommend it to corn growers." Scores of other seed specialists and many thousands of farmers use the Tower System. It pays to use it. It pays the rent, as it increases the yield.

Spares All Corn Roots



These Corn Roots within Five Inches of the Surface. A WET SEASON TRIUMPH. Ira Vincent, Algona, Ia., an average progressive farmer, grew by the Tower System the past season a well-matured corn crop, from which he sold over 200 bushels of Seed Corn at an average price of \$5.50 per bushel (sold to his neighbors who had used shovel cultivators).

This endorses the Tower way for a wet season, as well as dry weather. Avoid imitations: see that your cultivator has the name "TOWER" on the tongue. Write a postal, for our free booklet on "Corn Culture."

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(Original manufacturers of Surface Cultivators.)

TOP DRESS all your Crops with Nitrate of Soda alone, no matter what other fertilizers you may have used. 100 pounds to the acre for seeded, and 200 pounds to the acre for cultivated crops will do the work. The increase will yield large profits over the cost.

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A mulcher, smoothing harrow, cultivator, weeder and seeder—all in one. Forms dust mulch blanket of loose soil—prevents soil hardening and moisture escaping. Increases yield of corn, potatoes, oats, wheat, etc. Kills weeds. Fast work. Especially adapted to farm mulch. Lever and pressure spring control depth of teeth. Soil with or without seedling boxes for grass seed, alfalfa, clover, etc. Teeth cover the seed to depth desired. Adapted for a large variety of work. In stock near you. Send for catalog.

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Automatic shifting hitch—clevis always drops automatically in position ahead of working plow.

And here is another good feature of this plow—joints are attached with clamps and set screws. Ordinary weakening hole through beam is thus avoided.

Position of joints on beam can be adjusted to suit nature of land to be plowed. Rolling coupler can be used in conjunction with jointer—an advantage in very trashy land. Write for free booklet.



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The Accurate "Natural Drop" Planter

ACCURATE—because it has the "Natural-Selection" drop—an improvement over all other methods.

Kernels do not have to be tipped on edge to enter the cells. Surface of hopper bottom and openings to seed cells are oblique, or sloping. The kernels naturally move toward and fill the cells.

A full-variable drop planter. Plants two, three or four kernels as desired—all you do to change number in the hill is to move foot lever.

Drilling distances varied, and change from hill to hill or back to hilling made just as easy.

All corn plates for this planter have 16 cells. Therefore, the same drilling distances are obtained with plate as can be secured on other planters that require 8, 12 and 16 cell plates.

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Investigate the John Deere tip-over hoppers, quick detachable furrow openers, underdrum reel and disc marker without rope.

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in the pail
the cow kicks
over is lost
forever**

AND the butter-fat that goes into the can through the skim-milk spout of a cheap, inferior or worn-out cream separator is just as surely lost as the milk in the pail the cow kicked over. If you are trying to get along without a cream separator, or with an inferior or worn-out machine, you are losing butter-fat right along and butter-fat is money.

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Natco buildings serve well, look well and last forever. Put your silage where it's safe—in a splendid NATCO IMPERISHABLE SILO. The hollow vitrified clay tile are impervious to air and moisture and their dead air spaces resist frost. The reinforcing bands laid in the mortar hold the silo in a grasp of steel. Build your home with Natco Hollow Tile, too—make it attractive, comfortable, fireproof and windproof. The first cost of Natco buildings is little if any greater than frame buildings and that first cost is the last cost. We have plans for all kinds of farm buildings, free. Tell us what you are thinking of building—we have some splendid ideas for you. Send for our new book "Natco on the Farm." Fully illustrated from photographs and construction details of all types of farm buildings. Also ask for catalog describing the Natco Imperishable Silo.

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case. When a laxative or purgative be given, no treatment to check diarrhea should be given for 24 hours, in order to allow the medicine already given to establish its action. In cases where it is not considered wise to administer a laxative, or in other cases where one has been given, and diarrhea continues well marked beyond 24 hours, means of checking it should be taken. For this purpose the patient should be given 1 to 2 fluid ounces of laudanum and 2 to 4 drams each of catechu and prepared chalk in a quart of cold water as a drench every four or five hours until diarrhea ceases. In addition to this add to the drinking water one-quarter of its bulk of lime water and give a little at a time and often, as a gallon every hour, if the animal will take it, but large quantities should not be given at once. (In a previous article we described the making of lime water.) The food given

age, may be used to supplement the rape for growing pigs. Twelve parts corn and 1 part tankage is to be preferred for brood sows.

Oats and peas furnish an early summer pasture, although this crop will not furnish feed for the entire summer, and it will be necessary to have another pasture crop in readiness to turn the animals into. Rye, though not ranking high in protein as compared to alfalfa, clover or Canada field peas, has the advantage of furnishing a very early spring pasture. A larger grain ration must be fed with rye, the amount to be governed by the condition of the hogs. Blue grass, as a permanent pasture, is of fair feeding value, and when not pastured closely will furnish feed most of the summer. A blue grass pasture has an advantage in that permanent fences can be located and no additional labor is required in constructing temporary



No Farmer Can Afford to Grow Swine Without the Use of Good Pasture

should be of a dry nature, such as hay and a little grain. In cases where weakness is well marked and appetite gone, stimulants and nutrients, such as 2 fluid ounces of sweet spirits of niter or a cupful of whiskey, mixed with milk and a few raw eggs, should be given as a drench every few hours.

Keep gunny sacks saturated with crude oil where hogs can rub against them. Raise more hogs and fewer lice.

Growing, Fattening and Care of Swine

(Concluded from page 47)

turn means a low cost of production. The pasture crops which are most commonly used, are alfalfa, clover, rape, oats and Canada field peas, and blue grass. Alfalfa, though harder to start, furnishes more bone building and muscle forming tissue, and experimental feeding results rank this crop high. Brood sows and boars can be carried through the summer on alfalfa pasture where it can be successfully grown, and very little grain is required in addition. Allowing the breeding sows the run of the pasture and then feeding enough grain to keep them in satisfactory condition, is a good method to follow. Clover, which can be grown in nearly every section of Pennsylvania, though not as high in feeding value as alfalfa, makes a very satisfactory summer pasture. It can be supplemented with corn and middlings combined with tankage and oil meal in limited amounts; the grain mixture being fed only in such quantity as to keep sows thrifty and in satisfactory condition.

Rape is an easy crop to grow, and one that can be started quickly. Rape ranks below alfalfa and clover in value, but ranks well in growth and furnishes an abundance of feed from an acre of land. A grain mixture of 10 parts of corn and 1 part of tankage, or 6 parts corn meal, 3 parts wheat middlings and 1 part tank-

Hogs, more than any other farm animals, require adequate shelter both winter and summer. During the winter they need protection from the cold because they do not have the thick coat possessed by other animals to keep them warm. During the summer they need protection from the hot sun by some form of shade.

The construction of expensive hog houses is not always warranted. If it is possible to provide the necessary protection by means of cheap shelter it should be done. Many farmers make a practice of keeping the hogs in small colony houses, which are found to be satisfactory. The advantage of these is that they can be moved from place to place and used winter and summer. During the winter they should be kept in a protected place, if possible, and banked with straw or manure for warmth. There are two types of these houses, namely, the "A" shaped and the "shed-

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—Hood Farm, J. E. Dooler, Mer., Lowell, Mass.

SCHUMACHER FEED

And the Schumacher Feeding Plan

Feed as the grain part of the ration, three sacks of Schumacher Feed to one sack of gluten, oil meal, linseed meal, dried brewer's grains, dried distiller's grains, malt sprouts, Blue Ribbon Dairy Feed or other high protein mixture. When cottonseed meal is used, feed four to five sacks of Schumacher Feed to one of cottonseed meal.

World's Champion
Ayrshire Cow



Would Not Be Without Schumacher Feed
"We had such good results with your SCHUMACHER FEED, fed our world's champion cow, AUCHENBRAIN BROWN KATE 4th, who produced 23022 lbs. milk, 1080 lbs. butter, in one year, that we have since fed it to all of our test cows."
Yours truly, Penshurst Farm, (Signed)
E. S. Deubler, Supt., Narberth, Pa.

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OFFICIAL	676.5 lb. milk	34.76 lb. butter in 7 days
TEST	276.7 " "	134.97 " "
	527.8 " "	252.84 " "
Milk in one day, 104.6		

A daughter of Colantha Johanna Lad's, who now has 23 daughters that average 601 lbs. milk in 7 days. Twenty-one average 28.10 lbs. butter in 7 days, a record unequalled by the daughters of any other sire living or dead.

We have a Feed Book that gives you the whole story of the value of this feed. A postal card from you brings it by return mail.

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Harder features have been copied everywhere by other silos, licensed under Harder patents. So superior are Harder silos that they are used by the U. S. Government

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Heavy, non-conducting, steel-bound walls, rigid dove construction, airtight, convenient doors, safe ladder, storm-proof anchor—the most durable and profitable silo on the market.

Will cut your feed bills in half and pay for itself within a year or two. Hundreds of Harder owners say this.

Write for catalog telling of new Harder features for 1916.

HARDER MANUFACTURING CO.

COBLESKILL, N. Y.

roof" houses. The latter is more desirable, as it allows a greater amount of room and is cooler in the summer because the roof does not come so close to the ground. The use of movable colony houses also makes it possible to keep the hogs apart in case of an outbreak of a contagious disease. The number of hogs allowed for each one of these houses depends upon the size of the houses and the hogs. During the winter four brood sows can easily be kept in one house measuring 8x8 feet. During farrowing time each sow should be allowed a separate house or some other place suitable for farrowing. The cost of constructing a house of this size need not exceed \$15, not including the labor of building. The following material is necessary to construct a portable house: 2 pieces 2x6x8 for runners, 8 pieces 2x4x16 for frame, 8 pieces 1x12x12, 5 pieces 1x12x16, 6 pieces 1x12x14, 9 pieces 1x2x6, two 4-light windows, hinges and nails, and 100 square feet of roofing.

In case hogs are turned out on pasture and cots or permanent houses are not provided, temporary protection should be put so that they can get into the shade. Pasture with trees generally affords the necessary shade; if these cannot be had, construct a frame covered with old burlap.

HOG HOUSES.

On a farm where pure-bred swine are kept and early spring litters are desired, a permanent hog house is indispensable. The uncertain weather conditions of winter and early spring make it necessary to have farrowing places other than hog cots. In constructing a permanent hog house it should be made as simple and efficient as possible. A house that can be kept dry and warm and that will admit an abundance of sunlight is desirable. The size of the house will depend upon the number of brood sows to be provided for.

There is a general increasing interest in swine growing in Pennsylvania. With the constant demand for pork products, and the available information concerning the feeding and management of swine, it seems as though much progress should be made in the next few years.

Prize Awards.

The first prize, \$6, for the best article on general agriculture published during January, was awarded to R. Pier Wright, New York, for his article, "Alfalfa in the Chautauqua Grape Belt," which appeared on page 4, Jan. 1st issue.

The second prize, \$4, was awarded to John Underwood, Illinois, for his article, "Encouraging Hired Men," which appeared on page 4, Jan. 1st issue.

The first prize, \$6, for the best article in the Live Stock and Poultry departments during January was awarded to Walter Jack, Ohio, for his article, "The Pure-Bred Pays," which appeared on page 35, Jan. 15th issue.

The second prize, \$4, was awarded to R. J. Dayton, New York, for his article, "The Care of a Milch Cow," which appeared on page 10, Jan. 1st issue.

The small top milk pail is a necessity in the production of clean milk. A dairy barn should have good natural drainage and afford shelter from the cold winter winds. Dirty milk is more dangerous than dirty water because disease germs that would starve in water will multiply rapidly in milk. When the dairy cow is fed just enough to maintain her body weight she cannot be expected to give much milk. About one-half of the nutrients in the average ration go to sustain the body. Always feed a full ration.

Feed Less Corn and Get More Pork

Profit-paying hogs are only produced by right feeding. They must have animal food. **REICHARD'S DIGESTER TANKAGE** hastens growth—promotes health—reduces feed costs—swells profits.

Samples and prices, with new circular on hog-feeding, mailed FREE. Write today.

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prices. We save you money. Buy now before advance. Crop shortly known. We expect higher prices. Don't buy Field Seeds of any kind until you see our samples and prices. We specialize on high quality, tested Clover, Timothy, Alfalfa, Sweet Clover and Alsike; guaranteed the best, sold subject to your approval and government test. Write today for samples and special prices and big Profit-Sharing Seed Guide. **AMERICAN MUTUAL SEED CO., Dept. 129, 432 and 434 N. St., Chicago, Illinois.**

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Percheron Horses. Thirteen Pure Bred registered Percheron Stallions and mares. All sound and young. Some young mares are in foal for \$800 to \$1000. Wm. Faden, Greenville, Pa.

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How we Run Our Dairy

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Sixteen years ago we started dairy farming in western Pennsylvania on a hill farm 11,000 feet above sea level, three miles back from the Ohio river. Our nearest local towns are Freedom and Conway, where the largest railroad yards in the world are located. The phase of dairying in which we are most interested and best acquainted, is shipping whole milk as it comes from the cows, after being properly cooled and aerated. We started with six cows of mixed breed; we now have 14 head, all but three of which are high grade Holstein-Friesian, with a registered bull named Captain Lad at the head of the herd. We now raise the best heifer calves instead of buying cows as we used to do when we could get good fresh cows for from \$25 to \$40 per head with calf alongside. Good grade Holstein cows are now very scarce and high; we cannot buy a grade coming up to our requirements for less than \$100. We generally keep from 12 to 20 cows, depending entirely on our supply of feed. We have yet to see the dairyman that can buy all his feed and make a profit at the prevailing wholesale prices for milk at the farm. We get 15 cents per gallon for April, May, June, July, August and September, and 20 cents per gallon for October, November, December, January, February and March, less 12-5 cents for freight. We ship our milk to Pittsburgh, a distance of 24 miles. Five other dairy farmers besides ourselves, making a club of six, haul the milk, week about, to the railroad station. This gives us nearly full time on the farm and enables us to do without hired help.

We have our stable equipped with steel stanchions and iron stalls, cement mangers and cement gutters behind the cows, a litter carrier for cleaning the stables, and a manure spreader for spreading the manure. We have the compressed-air water system, a large tank in the house cellar and water pressure in the small building, with a concrete floor, containing ice box, etc., where we cool the milk, in the stable and wherever else we want it; besides, we have a good spring and trough near by, where the stock is watered when turned out on nice days for exercise. We use a cooler for cooling the milk; in the summertime we run cold water through the cooler from a deep well close by, and milk not immediately shipped is kept in spring water which never goes above 50 degrees after being placed in 5-gallon cans. Shipments leave the farm each morning, except Sunday, at 8 o'clock, and arrive at Pittsburgh about 10.30 o'clock. This gives the dealer time to retail it by 12 o'clock, or hold and bottle and deliver the next morning, which many of them do.

Our main feeds are corn ensilage, clover hay, corn meal, cotton seed meal and wheat bran, and a small amount of salt. We get our best ensilage from any well cared variety of corn that will mature in our latitude; we have tried all kinds—have grown the Eureka over 16 feet in height. We always try to grow all the clover we can—alfalfa, alsike and mammoth—and common red; we have fairly good success with all the clovers. We cut alfalfa three times in a season. We also grow Wonderful cowpeas for summer or fall feeding, in connection with fodder corn and pumpkins. If at any time there is any feed to be bought we consider cotton seed meal and alfalfa hay the most economical feeds to buy for dairy cows.

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FEBRUARY 15, 1916

Our Poultry Number

"THE finest lot of articles I ever looked over," was the comment made by our Poultry Editor when he had finished reading the manuscripts submitted for this number. They were, for the most part, excellent, and we congratulate the contestants on the mastery with they handled their chosen subjects.

The first prize we awarded to Miss M. A. Herold, and in her story our readers will find many sound suggestions that are worthy of adoption. The many sides of the poultry industry are carefully discussed and the whole article is brimful of poultry common sense.

The second prize went to R. J. Holliday, who chose for his subject, "Mangels vs. Sprouted Oats." Every reader's attention will be held by this article from start to finish. It brings out the value of the easily grown mangel in a most convincing manner, and we believe these pointers will be the means of saving our readers much trouble another year. We have no doubt that the majority of our readers will find a "spot" on their farms to grow this succulent feed.

Every business woman on the farm (and we believe 99% of our farm women are good business women) will cut out and preserve for future use the third prize article by Belle Barker; every woman on the farm welcomes a chance to earn money for herself, and here is one way, well told—and deserving of the attention of the men as well. To R. S. Good we awarded fourth prize. In his article, "The Best Paying Branch of Farm Work," the raising of poultry as a branch of farm work is treated in a thoroughly business-like manner and is well worthy of careful study.

We are proud to present this issue to our readers, and thank all for their efforts and good will evidenced.

Poultry Breeding and Trap Nests

CAESAR accomplished more in his short life than all other Romans accomplished before him.

In four short years The North American Egg Laying Competitions have accomplished more in increasing egg production in the United States than all of its people since Columbus landed on our soil the hen that laid the very egg that this wily navigator and discoverer made to stand on its end.

Illustrating the progress in egg production brought about in these constructive annual egg laying competitions the front page of this issue of The Practical Farmer is made up of the greatest egg producers America stands sponsor for, a Rhode Island Red from Tennessee, with a record of 256 eggs, a White Leghorn from England, which laid 282 eggs, a Columbian Plymouth Rock from New Jersey, scoring 286 eggs, and last, and by far the greatest, a White Leg-

horn from Maryland, producing four and one half times as many eggs in 365 days as the average American hen, or 314 eggs.

Cesar, in his mightiness, wielded an influence which has come down to our times and our own people; this mighty layer of 314 eggs in one year, Lady Eglantine, will, directly through her blood descendants, build up the egg production of this country and indirectly will stimulate breeding for eggs to an extent hardly conceived a few years since.

What the Babcock tester is to a cow's value in milk productiveness the trap nest is to the hen; as is the son of the greatest milk cow now known to the future of a milk herd, so are the sons of this wonderful hen, which sons carry the egg producing prepotency of their dam.

Today the hen industry of this country is third in money value, more than equal to all the gold, silver and other precious metals mined, greater than the combined earnings of all our railroads and steamships, and greater than the yearly value of wheat, even though the mighty hen, each one of all the nearly five hundred millions we own, lays on an average but seventy each twelve-month.

Imagination runs riot when we contemplate the value of the hen's product if her average were doubled; to conceive her value if her output were trebled seems beyond the average mind.

Better breeding, as indicated by the trap nest and selection for desirable characteristics, will enable us to build up any race of fowls or subdivision thereof into heavy producers. The lay for Lady Eglantine and her four pen sisters in the competition in which she was engaged reached the unusual average of 242-5 eggs each, or 33-15 more eggs than treble the yield of the average hen.

And all of this came about through correct breeding as indicated by the trap nest.

Concerning Our Supplement

LARGE as are the Live Stock and Dairying interests on the farms throughout the Middle Atlantic States, The Practical Farmer believes these interests should be larger and thinks the farmers throughout this territory in principle agree in this. We believe that our readers want to know more about animal husbandry and dairying, and accordingly in this issue of The Practical Farmer we are bringing out a new departure—a "Live Stock and Dairy Section," which appears as a supplement to this issue. On the first page of this supplement the editors handling this department set forth their purposes and ask the co-operation of our readers in their plan to make this a more important feature of this publication. We urge upon our readers a careful reading of this editorial statement, and invite expression of their opinions regarding the plan.

"Locking the Stable Door"

"LOCKING the stable door after the horse has been stolen," is a trite saying that will apply to many differing cases. As, for instance, the timber supply of the United States. Most people of middle age can remember when in most of the Northern and Middle Western States unbroken forests were the rule, but have lived to see that they are now the exception. And the question of the wherewithal to supply the growing demand for timber has become an insistent one which demands immediate attention.

Forty or less years ago the idea of a timber famine in the United States would have been looked upon as chimerical, while now it is a disagreeable present prospect. But we are going to lock the stable door on that particular horse now, and conservation of our fast dwindling forest supplies and the reforestation of denuded tracts of land are demanding and receiving the attention which the situation demands.

The United States authorities are exercising a real and efficient supervision over the large area of government timber reservations to preserve the timber from destruction by the fires which have swept over them annually unchecked, while in many of the states steps are being taken by the authorities to grapple with the problem of forest preservation in a practical manner.

We notice that in Wisconsin the newly created Conservation Commission is going about this work in a decidedly effective way. The forestry branch of the Commission offers to co-operate with land owners to provide for the proper treatment of their wood lots, or with those who wish to plant trees on idle or waste

areas which are suitable for that purpose. When requested they will send an expert forester to make a personal examination of the timber, or land, with the owner or his representative. If a wooded tract, proper handling of the trees, trimming, thinning out, etc., will be demonstrated. If bare land, the best methods of replanting, the most suitable varieties of trees, and care of the young plantation to create forest conditions, cost of plant stock, cost of planting, and subsequent treatment. To meet the demand for young trees which it is hoped the plan will create, the Commission is growing trees on a large scale, which will be sold at the approximate cost of raising. At the present time the Commission has supplies of pine and other coniferous trees available for distribution at a stated price per thousand.

Wisconsin is one of the pioneer states in the idea of making government subservient to the real everyday needs of the people; and its Conservation Commission has struck a good lead in tackling the timber problem.

The Fertilizer Situation

A QUESTION most commonly asked among our readers is: "What are we going to do for fertilizer this year?" The war abroad has so upset the fertilizer market by shutting us off entirely from certain forms of plant food and creating such a demand for others as to put these materials out of reach of the farmer, till now the farmer is rather puzzled as to the best course to pursue.

We have always been taught that for best results, on most crops, a complete fertilizer—one containing ammonia, phosphoric acid and potash—must be used. We are able to secure ammonia and phosphoric acid, but potash is out of the question, as it cannot be secured in any appreciable quantity. Some manufacturers may have had a quantity on hand and are offering 1 per cent. potash in their goods. For this potash they are charging at the rate of from five to eight times more than during ordinary times. It is a question whether 1 per cent. of potash is worth these prices to the farmer—from an agricultural standpoint. We hardly believe it is. Our advice would be, put the money you would pay for potash into an extra amount of ammonia and phosphoric acid.

We believe a good practice for this coming season is to use a fifth or quarter more ammonia and phosphoric acid than you generally do to encourage the root growth to the greatest possible degree, in order that the roots may cover more area in search of available plant food in the soil, especially potash. Ammonia, both liquid and solid, should be carefully conserved so as to hold all its plant food with the least possible loss. Green crops should be turned under whenever possible, to maintain, and increase if possible, the humus content. Great care should be taken, this year especially, to see that the soil be sweet or neutral (not acid) and lime, of course, should be used to correct acidity. Unleached hard-wood ashes are excellent as a source of potash, as they contain about 5 per cent. of potash, besides lime, but we are afraid that their market value this year will exceed their agricultural value, although it is quite possible that local supplies may be secured at a reasonable price.

The price of ammoniates and phosphoric acid, although higher than last season, is well within the range of agricultural value. An increase in price of \$2 per ton means only an increased cost of 50 cents for fertilizing an acre, when 500 pounds of fertilizer are used per acre. It is not so much the cost of fertilizer that should be considered as what results the fertilizer will produce. If the fertilizer will produce results commensurate with its cost, then the cost is a secondary proposition. We believe it is bad policy to reduce the amount of fertilizer we use this year on account of its cost, of course, potash being excepted. Some ammoniates are high—those being used in the manufacture of ammunition—but we are fortunate in having many sources to call on for them; phosphoric acid is practically an absolute necessity for every crop, and this is not so high as might be expected. The crops must be fed and if they are not we will suffer this fall.

The basis of all good agriculture is tillage, and tillage will help in unlocking the crude forms of plant food already in the soil. The roots must not be hampered in their search for food, and in a mellow, well worked warm soil they will do their best. By using every means in our hands and assigning nature in every way possible, we think the results at next harvest time will be pleasing. It is largely up to you.

SECOND PRIZE ARTICLE

Mangels vs. Sprouted Oats

By R. J. HOLLIDAY

It is a hard matter to pick up a farm paper with a poultry department, which does not contain an article exploiting the virtues of sprouted oats, while those favoring the lowly mangel seem inclined to lead the reader to conclude that it is a hard and expensive crop to raise.

In my fifteen years experience such is not the case, and whether the poultryman is doing business in a back yard or on a quarter section, he will find the mangel superior in every way.

I gave sprouted oats one year's trial and have taken pains to note results obtained by my acquaintances, and while they will furnish the necessary green food, they must be fed carefully, the fowls being closely watched for bowel trouble, and—oh, what's the use? To sum it all up, I discarded the sprouted oats business as one more poultry fad culled out of my system. I consider I can devote my time and energy to better advantage than in puddling around with a sprouter.

There is always a spot on every farm, regardless of size, where some mangel seed can be sown. I always endeavor to make a side line of them; that is, sow them between a crop requiring more space between the rows than the majority of our crops, such as melons, squashes, new plantations of raspberries, etc. The past year I set out an acre of asparagus, laying out the rows 5 feet apart and sowing mangels between the rows. This arrangement left sufficient space between the rows for horse cultivation, and practically the whole expense was the cost of seed, one hand weeding and thinning, and harvesting the crop, as they received the benefit of the manure, commercial fertilizer and cultivation given the asparagus.

This plot, which under the ordinary system of planting, would approximate one-half acre, yielded about 25 tons of mammoth mangels, many weighing 20 to 25 pounds each. Many were sold to poultrymen and dairymen at from \$10 to \$18 per ton, as I only have a limited amount of live stock. However, our family cow received 1½ bushels per day, and paid for them by keeping up a flow of milk equal to the days when pasture was at its best. We also made mangels half the ration fed to our seven hogs, and I never saw hogs keep in better condition, lay on weight faster, or show up in quality of meat when dressed than did those receiving this cheap feed.

As for the poultry, for which the mangels were originally intended, they are simply crazy for them. I give them all they will eat with absolutely no ill results. They dispose of them at the rate

of 1½ bushels per 100 head, and instead of puttering around with oats, I fill up my baskets and dump them into the pens. It is unnecessary to place them on spikes or hang them up as so many advise, for if the floors are in as sanitary condition as they should be, there is no more danger of the fowls eating any more filth than when scratching for their grain.

I feed all sorts of waste vegetables, but the hens prefer the mangels to any other variety of vegetable or fruit. I used to think cabbage about right for the poultry, and still believe in utilizing any waste heads in that way, but for genuine results, especially when the green food must be purchased, or, in the case of an extensive plant where large quantities are required, the mangel is, in my estimation, the ideal vegetable.

The city fancier who has no available ground, can, by looking around a little, get in touch with some farmer who can spare him at least enough to carry him over the winter, and a corner of the cellar will hold enough to feed a good many fowls all winter.

The theory that freezing ruins mangels I have exploded, as many of mine were frozen this winter before I harvested them, and I have been feeding some that are frozen solid in storage, with positively no ill results. These were stored in the granary after our cellar was filled, and I merely take the following day's supply into the house to thaw out for about 18 hours before feeding. The hens seem to relish these frozen roots full as well as those which have never felt frost, and shell out the eggs equally as fast.

Of course, continuous feeding and thawing would cause decay, but one freezing will not harm their keeping or feeding qualities if kept frozen until needed. We are also always advised to store in pits, but those in our cellar, which is really too dry for a vegetable store room, have not shrunk up to Jan. 15th, enough to hurt the quality in the least. The farmer who will devote one acre to mangels and do a little missionary work among the poultrymen and less progressive dairymen who lack silos will easily procure a ready market for as profitable a crop as is grown on the average farm.

One combined thinning and hand weeding will be all the labor required to grow the crop, as the horse with fine-tooth cultivator when plants are small, and a regular 5-tooth cultivator during the rest of the season, will keep the field free of weeds and stimulate rapid growth.

THIRD PRIZE ARTICLE

Baby Chick Trade for Women on Farms

By BELLE BARKER

For the woman on the farm with only a limited amount of time at her command, the hatching of baby chicks for sale offers a profitable industry. This statement presupposes that an incubator is used and that the eggs for hatching be of pure-bred stock. Now, perhaps some of you are already raising objections that my statement does not apply to your case. You may say you do not keep pure-bred fowls. You may say you have no incubator and no money to buy one, or that you do not know what kind to buy, or that you are afraid you would not have successful hatches. All these reasons have been advanced to me many times by people who hesitate to try this work.

To the first objection I have only one answer; that is, if you do not keep pure-bred stock these days you are not progressive, and that is what you must be to succeed in the chicken business or any other.

To objection number two I will say that if I had no incubator and no money to buy one, I believe I would borrow the money, for an incubator will pay for itself in a short time. I have one which I bought six years ago for \$12. The same machine may be purchased for \$10 now. It is a 150 to 175-egg machine, and it has never failed me yet. In my second year's experience I hatched 126 chicks from 135 fertile eggs that were left in the tray after testing. Under

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Page 7

A strong, practical incubator guaranteed to hatch, guaranteed to satisfy you, or your money back, at \$4.80—every detail given complete on Page 7.

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Best medium and late varieties. Selected stock, free from scab, blight and other diseases. Write for prices.

B. H. Wallingford, Auburn, Maine

Eggs in Several Baskets Insure Poultry Success

(Concluded from page 71)

green bone. But the price then ranged from \$1 to \$1.35 per bushel, and at that price, with winter eggs bringing 40 to 45 cents a dozen, there was a nice profit in feeding it. Cabbage is fed in winter for green food, and when there are no winter eggs, as happened once or twice through neglect which was occasioned by illness, the hens do not get the blame, as given proper food and care, winter eggs will be produced.

Before the scratching shed was built there were droppings platforms in the chicken coop and the grain was fed in a litter on the floor. These platforms I built, with the help of my little brothers. They were not fancy, being constructed of lumber picked up about the farm, but served the purpose until the shed was built. Now the chickens are kept locked in the scratching shed every cold, stormy or snowy day. So far the winter has been open, so whenever the ground is free of snow they are let out at noon. Though the weather is cold, they seem to enjoy this half holiday, and as it does not affect the egg yield I shall continue the practice, as they like it and I think it keeps them healthier and less susceptible to disease.

While at first the sales consisted solely of market eggs and poultry, and there is still quite a lot of these produced and sold, I now sell breeding stock and hatching eggs also at double and more than double the prices I used to get for common stock. And the beauty of this lies in the fact that it costs no more to produce the pure-breds than it did to produce the mongrels, so the increase in price is clear gain and what is often termed "value."

So that step, which was taken in spite of opposition, has proved profitable, and my White Wyandottes are not only a treat to the eye, but are also a treat to the pocketbook.

The next step in my progress was when I began raising ducks. They have proved very profitable and in this—the antracite region—are in great demand. While the ducklings are harder than young chickens, still there were troubles. The worst and biggest troubles were turtles and rheumatism. The turtles proved very disastrous to profits, as they get the ducklings even when they are almost full grown. However, after waging a severe warfare on them they seem almost exterminated.

A great many people do not allow ducklings in water from shell to market. I, however, think otherwise. Of course, I would not allow them in water before they feather, but when they are almost ready for market I finish the preparation by allowing them access to the pond. The reason for this is that the almost constant immersion in water makes the plumage snowy white and they look far more tempting than those ducklings which are kept from water. I consider the appearance very important, as they are sold alive and the clean looking birds are naturally more attractive in appearance than the dirty plumaged ones.

By buying Pekin drakes, the common stock with which I began has been highly improved. While a duckling used to weigh between 3½ and 4 pounds, they now weigh from 5 to 6 pounds, with no special preparation or fattening. That is a 10-weeks weight; older ones weigh more.

This is a branch of the poultry business which has proved very profitable, as not only are "green ducks" easy sale, but every spring finds me unable to sup-

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Capacity 75,000. Eggs all carefully selected. Chicks strong, sturdy, livable kind. Prices, quality considered, unbeatable. Anyway, you cannot hatch good chicks as cheaply or as well as I can. Then I sell you my chicks for less money than you can buy Hatching Eggs, and save you the bother, losses, etc. Write me now and get my Chick Book and prices.

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made best egg record of 20 breeds. Circular and price list of stock and eggs free. R. Van Hoesen, Franklinville, N. Y.

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Single Comb Brown Leghorns

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ply the demand for hatching eggs. It is not at all uncommon for from three to five people to call in one day, each demanding from one to five sittings of duck eggs. Of course, with such a demand it is impossible to supply all, so they each get one-half or one-fourth the number they want, and often must wait from one to two weeks to get them.

The reason for this demand is because the fertility of the eggs runs exceptionally high. These customers report from 10 to 13 ducklings from 13 eggs, with a surprisingly large number getting 13, and they tell all their friends about these hatches, which please them most highly. Then when these friends want hatching eggs they come to me for them, as they are sure the eggs will hatch, providing the hen does not desert the nest. I attribute this fertility to the fact that the breeding flock has free access to the pond. The breeding flock today consists of 17 ducks and 4 drakes.

It has been my experience that guineas are a profitable side line in the poultry business, and I never keep less than five. Usually I keep more than that, but never less. As the price ranges from 14 cents a pound wholesale, to 75 cents to \$1 apiece for breeders, it will easily be seen they are profitable, especially as they pick up their living wandering over the farm from early spring to late fall.

The young birds are raised very cheaply, therefore profitably. Besides, the eggs are plentiful and come in handy as table eggs.

While the geese belong to another member of the family, I have the exclusive care of them, and know just "what is what" with the geese. The breeding flock this year consists of 7 geese and 2 ganders. While I have found chickens and guineas profitable, and ducks very profitable, I put geese ahead of them all as profit getters. Consider how little feed it takes to bring them to maturity and the prices they bring; it is little wonder that geese stand at the head of my list as profit getters. When I give facts and figures I think you will agree that I am right in placing them at the head for profit.

Geese sell for 20 cents a pound live weight, at any time, and this year went as high as 25 cents a pound. One of the geese, such as we raise, brings a nice sum of money at even the lowest price, which is 20 cents per pound. These geese weigh from 13 to 15 pounds each and bring from \$2.60 to \$3 apiece. That certainly is a nice sum of money to get for a goose, and as it costs from \$1.30 to \$1.50 to raise them the profit ranged from \$1.30 to \$1.50 on each goose. That is allowing 10 cents a pound as the cost for raising them, which is not only generous, but more than we really believe it costs.

But these geese are not the common geese. They are a big breed. The mature geese weigh from 18 to 20 pounds. The start was made with common geese and they weighed from 8 to 10 pounds and brought from \$1.60 to \$2 apiece. Then two geese and two ganders of a big white breed were bought as breeders. The extra gander was bought to mate with the common geese. Through the introduction of these ganders even the goslings hatched from the eggs the common geese laid, weighed almost double what the old mongrel stock weighed. So every goose sold this year brought double, or almost double, the price which a goose brought the first year. And it didn't cost any more to raise these geese than it did the common stock. That is the beauty of it when one commences to keep pure-bred stock. The profits are increased and the expenses remain the same, so the

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gain is much higher than with the mongrels. One always wonders why one didn't keep pure-breds before. They are no more trouble than mongrels and will give larger profits on the same amount of feed.

The sale of geese is not the only thing that makes the profits run high. Goose eggs also are in big demand at excellent prices. The common goose egg brings 15 cents, while the eggs of the big breed are in big demand at 25 cents each. At these prices the demand has never been supplied. And as the geese will lay more eggs if fed beef scrap it pays to feed the scrap. Geese can be raised more cheaply if pasture is supplied, so it is advisable to supply plenty of pasture.

There is not as much profit in any other branch of the poultry business as there is in geese, I am convinced; but nevertheless I advise all farmers not to put their dependence in the one branch, no matter how profitable that branch may be. As I said before, unforeseen circumstances may cut down the profits in that line and then it pays to have other branches.

And let me whisper a word of advice to the farmer who is worrying over the fact that his children seem to have an inclination to drift cityward. Try giving a branch of some one department into the child's care when he reaches the age at which the "town job" idea gets a strong hold. Let it be understood that the profits belong to that child, and you will find that the child will become more satisfied. There will then be no talk of going to town, and the satisfaction of keeping the child satisfied and at home will more than compensate for the pecuniary loss. Besides, viewing it selfishly, the help which the boy or girl will contribute toward the other work on the farm will be done with more interest than a stranger would take, and will be done the way you want it done, without the necessity of giving the exact directions which a stranger requires.

Speaking for myself, it is only the fact that I earned my own spending money, which I could spend as I pleased with no questions asked by any one, that kept me on the farm. While I always believed that farm boys and girls should stay on the farm, and I much preferred farm life, in spite of that belief and preference there came a day when the spending money given me was not enough. Then my thoughts turned to town. And if I had not been given the chance to earn money I would have gone to town. And this life is so much more to my taste than town life would be, yet I would have sacrificed it if I had deemed it necessary. And I would have thought it necessary if I hadn't gotten the opportunity to earn money. That is the crux of the whole matter—money. Not a fortune, remember, just money that one feels is theirs and which may be spent as the spender wishes.

So try this, Mr. Farmer, and I am sure that you won't be sorry. Keep not only chickens, but ducks, geese and guineas; turkeys also, if you have the range. Either give one department, with its accompanying profit, to the child, or give the entire line of poultry into the care of the child, with the understanding that a certain per cent. of the profits will belong to the attendant. Then watch the solicitude and work that will be expended on the poultry, and as a result the way the poultry profits will climb as a result.

Tells Why Chicks Die

E. J. Reeder, the poultry expert, 4362 Reeder Bldg., Kansas City, Mo., is giving away free a valuable book entitled, "White Diarrhea and How to Cure It." It contains scientific facts and tells how to cure this terrible disease and raises 98 per cent. of every chick. All poultry raisers should write Mr. Reeder for one of these valuable FREE books.—Adv.

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BLUE MOUNTAIN POULTRY FARM "GIANT" STRAIN BRONZE TURKEYS, with great massive bone and frame. Bred from Great Pure bred S. C. White Oringtons, \$3.00 per 15 eggs. S. Hugo-King is 1 lb. at one year of age. Buff P. Rocks, C. White Leghorns, \$1.50 per 15 eggs. Mail price after Jan. 1st. **J. C. CHIPP, Box F, Safford, Ind.**

More Potato Profits

MACHINERY may make all the difference between profit and no profit in growing potatoes. Get the right ones. We make complete lines of planting, weeding, cultivating, spraying, ridging and digging tools, all of which we guarantee. 30 years of factory and farm experience back of them. We'd like to tell you about all.

IRON AGE

potato machines but have room here for one only. Isn't it better to plant right to make every foot of ground count and none of the rest of the work wasted? Saves one or two barrels of seed on every acre. Sold with or without fertilizer distributor. Other potato machines are **Riding and Walking Cultivators, Four and Six Row Sprayers** (also one with low nozzles to reach underside of leaves), **Potato Diggers, Weeders and Rippers.**

Ask your dealer to show them but write us for separate book for each line. Best Free to all who state in what way they are interested. How many acres are you going to plant?

Bateman Manufacturing Co., Box 15 — Greensboro, N. J.
We also make Garden Tools for practical farmers and Sprayers of every kind.

100 Per Cent Planter
Weeder
Potato Ripper
Potato Sprayer 4 or 6 Row
Riding Cultivator
Potato Digger
With Dishes It weeded
With Engine It wanted

Increases Value of Horses and Mules to Clip

When the heavy coat that holds the wet wind and dirt is removed they get more good from their food, are healthier and work better. They are more easily kept clean and their improved appearance greatly adds to their selling price. It also pays to clip the flanks and under the tail to keep them clean and cool. Clip them with the famous

Stewart's Machine

It turns round, clips faster and closer and stays sharp longer than any other. Clippings are not from hair but from the skin. They are enclosed, protected and run in a safe way. Has six foot long, flexible shaft and the celebrated Stewart's double tension slipping head. Highest grade. Price complete, only \$7.50.

Get one from your dealer or from Stewart's Machine Co., 22 and 24 E. 1st St., Chicago, Ill. Money and transportation costs back if not satisfied. **STEWART'S MACHINE CO., 22 and 24 E. 1st St., Chicago, Ill.**

Poultry to the Front

With rapid strides the poultry industry is approaching a scientific level, as a result of educational effort.

Some years since the secretary of our federal agricultural department stated that to keep pace with the progress in the hen industry one would need a special system of arithmetic. This is also true of general agriculture, and since poultry is the mortgage lifting ally of honest effort, it is fitting that both should have been speeded up co-incidentally.

Today the growing of greater crops, while enriching the soil, does not differ in effect with breeding for more eggs while taking profit from the egg yield of the moment.

The poorest producing land can be improved in one season; the poor laying flock can be reconstructed in one short season.

What has been done to increase egg production is but the forerunner of what will be done. The achievements in poultry culture in the past five years will be doubly achieved in the five years coming. It is a long way from 70 eggs per year to 200, and yet it required only one year of demonstration to prove that 256 eggs were possible; another year proved that 282 could be produced by one hen in 365 days and that 286, an increase of 4, required still another. But out of the depths of unknown possibilities there was brought forth, in the fifth year, another generation, builded upon the foundation of accurate mating, and the enormous lay of 314 eggs in 365 days was the result! This yield may never be equalled again; it may be outdone at any time; 303 eggs were laid by another hen and the fact is established that mating can and has resulted in improved yields.

Another potent fact in connection with progress in poultry culture is that these two pullets, 303 and 314 egg layers, were hatched in incubators, as were their sires and dams, grandmothers and granddams before them, reared artificially and never knew the tender care and guiding cluck of a devoted mother.

In these inert mechanical devices for hatching chickens lies the solution to paying off the farm mortgage, to pin money getting, to the necessities of life and to its pleasures.

Incubators are much more profitable investments than government bonds, and without the risks of war, politics or the fall of a nation, and are quite as certain to make returns as we reckon taxes or go to sleep.

Brooders occupy the same relative position to poultry culture on a profitable scale as do incubators, drinking fountains and feed hoppers. The Egyptians did custom hatching in incubators three thousand years before the present Christian era, and yet the modern farm, equipped to supply hatching eggs or day-old chicks to its neighbors, is rare, profit going to waste in many cases.

A fair start with baby chicks or hatching eggs from good layers, a cockerel from an egg-producing family and the way is open to neighborhood sales. Incubators, brooders and feeders cut down the labor, get your next fall layers out on time and the cost comes back time and time again in one single lesson.

Simple, plain advertisements, reaching further than the little section in which we live, telling our fellow readers what we have to sell from good stock, will be the starting point to a big poultry business, and especially is this true where this big, wholesome, pleasant and highly profitable business is made a feature in our favorite paper covering the farm and all that belongs to it.

This Big Crop was not Big Enough!

Prizes Amounting to

\$3000



IN CASH

Thirty farmers have received \$3000 in cash for the largest 30 crops of wheat, corn and potatoes, grown on our fertilizers exclusively, under severe restrictions as to measuring the land and weighing the crops. Here are the results:

BEST YIELDS			AVERAGE YIELDS		
Potatoes	375 bush. per acre	10 Prize Winners	321.3 bush. per acre		
Corn	115 bush. per acre	10 Prize Winners	96.74 bush. per acre		
Wheat	59.86 bush. per acre	10 Prize Winners	48.50 bush. per acre		

The crop shown in the photograph was good but not good enough to win a prize.

HOW DID THEY DO IT? Send for our contest book today. It gives all facts and figures and pictures of the great crops. We send it free to any address

The American Agricultural Chemical Co. (Inc.)
CLEVELAND, CINCINNATI, DETROIT

Kirstin ONE-MAN STUMP PULLER

Makes Land Clearing Easy, Economical, Practical

You can't realize the wonderful strength, speed and power of the new Double Leverage Model Kirstin until you see one at work. Compound leverage gives any man the strength of a giant—enables him to quickly pull biggest stumps with ease. The Kirstin way is quickest, easiest and cheapest way to clear stump land. No heavy cumbersome machines to pull around, tip over or get stuck in boggy places. No sweeps to break, no horses to risk, no dynamite, no danger. With a Kirstin you simply walk into your stump field and "clean it up" in no time at all. You can

Try The KIRSTIN For Ten Days

Prove to yourself that it clears your land cheaper. Let the Kirstin's superior features demonstrate their value right on your own farm. Less weight—greater strength—lower cost—greater speed—all these valuable qualities are made possible by the Kirstin Quick-Detachable Connections, Auto Release, Non-Twist Cable and other Kirstin patented features.

Write Today For The Big New Kirstin Catalog which gives you full details about the Improved Double Leverage Kirstin One-Man Stump Puller, Kirstin Service, Free Information Bureau, Time Payment Plans, etc. *Agents Wanted.*

A. J. KIRSTIN CO.
7926 Ludington St., Escanaba, Mich.

Use Anywhere—Hills, Swamps, Rough Ground or Thick Timber.

Delivered to You FREE

A sample 1916 model "Range" bicycle, on approval and 30 DAYS TRIAL. Write at once for large illustrated catalog showing complete line of bicycles, tires and supplies, and particulars of most marvelous offer ever made on a bicycle. You will be astonished at our low prices and remarkable terms. **30 Days' Free Trial**—Make money taking orders for bicycles. Free and desirable from our big catalog. **Do Business direct with the leading bicycle house in America. Do not pay until you know what we can do for you.** Write for 70 leaflet. **MEAD CYCLE CO., DEPT. K-311, CHICAGO**

Only \$2 Down
One Year to Pay!

\$24 Buy the New Butter-Tite No. 2 Light-running easy cleaning, close skimming, guaranteed for a lifetime. Skims 55 quarts from 100 lbs. of milk. Larger sizes up to 1-1/2 shown here. **30 Days' Free Trial**—Write for details. **ALBAUGH-DOVER CO., 129 N. Dearborn St., CHICAGO**

30 Days' Free Trial—Write for details. **ALBAUGH-DOVER CO., 129 N. Dearborn St., CHICAGO**

7 WOOD CO. of Th

And How THEIR ASTON

You no doubt have heard of these seven by name and by record. But, do you know how Everyone of these seven World's Champions during its record-making, record-breaking of In each instance SCHUMACHER FEED was a necessary of the daily food. The owners of these cows of breeds—at different farms and different times, were all in acc lecting SCHUMACHER FEED as a part of the rations to le these important tests. These men know feeds as breeds. They also know that the best feed must le get the best results in the pail. It is also a significant back of almost every World's Record of recent years SCHUMACHER FEED as the "unseen power" which

SCHUMACHER

The Record-Making, Record

SCHUMACHER FEED is a "wonder feed"—the most palatable feed we see "better conditions," brighter eyes, more vigor and life, less sickness. It is composed of kiln-dried, finely ground products of corn, oats, wheat, the dairy cow to best advantage. When fed on the following plan, it

This Feeding Plan Will Surprise You

Feed as the grain part of the ration, three sacks of SCHUMACHER FEED. Sack of gluten, oil meal, linseed meal, dried brewers' grains, dried distillers' grain, Malt Sprouts, Blue Ribbon Dairy Feed or any other high protein mixture. When cottonseed meal is used, feed four to five sacks of SCHUMACHER FEED to one of cottonseed meal.

As a suggestion of the amount to feed each cow, give one pound of the above mixture with all the roughage and ensilage the animal will consume, to every three or four pounds of milk that the animal yields.

THE Quaker Oats Company CHICAGO, U. S. A.

World's Champion Junior 3 Year Old



Funderne Hollingen Fayne

24612.8 lbs. Milk
1395.06 Butter
in 365 days

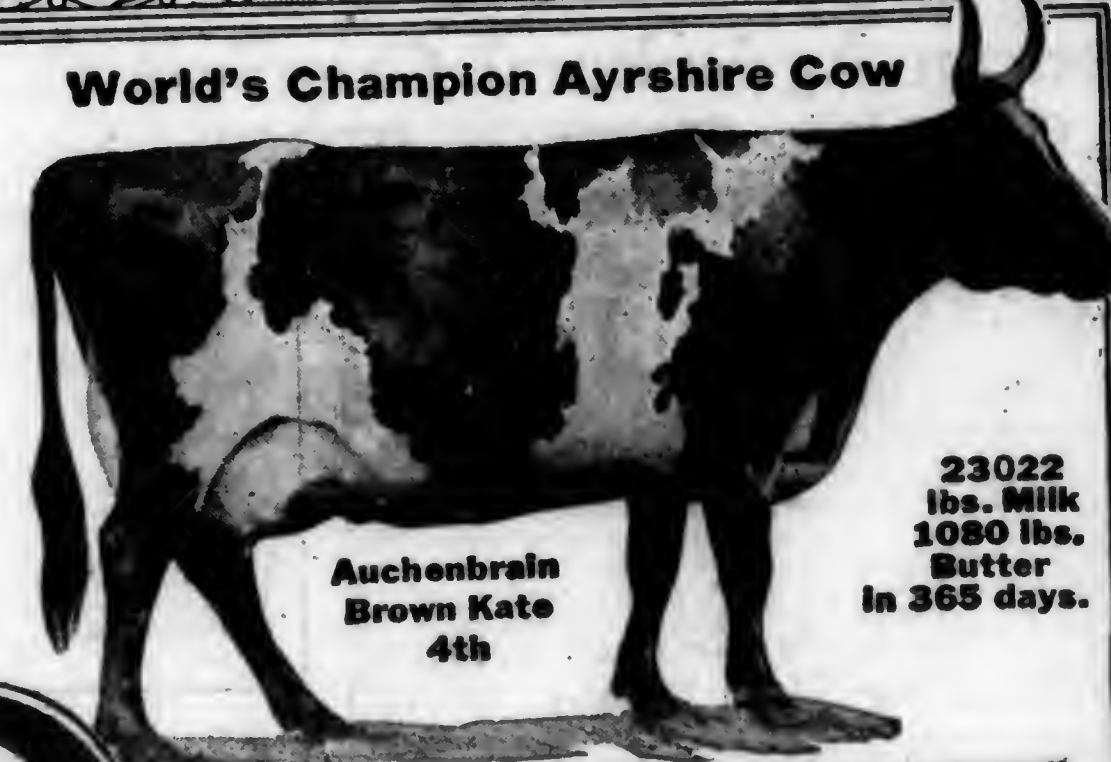
World's Champion Junior Three-Year-Old Record Held Nine Months



Dutchland Changeling Colantha Lad

21239 lbs. 13 oz. Milk
946 lbs. Butter in 365 days

World's Champion Ayrshire Cow



Auchenbain Brown Kate 4th

23022 lbs. Milk
1080 lbs. Butter in 365 days.



Sophie 19th of Hood Farm

Here's What It
"It will probably interest you to know that Sophie 19th of Hood Farm, who produced 10,229 lbs. of milk in 1914, was fed on a ration of three sacks of SCHUMACHER FEED to one of cottonseed meal. Very truly,
The Quaker Oats Company"

The Practical Farmer

Live Stock and Dairy Section

Volume 112, No. 4

Philadelphia, Pa., February 15, 1916

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In introducing this new departure, THE PRACTICAL FARMER'S LIVE STOCK AND DAIRY SECTION, the editors of this paper want to take its readers into their confidence and discuss with them the idea behind this new feature.

The territory throughout which THE PRACTICAL FARMER has its largest circulation is, roughly speaking, the Middle Atlantic States. The soil conditions throughout this part of the country, the climate, and the fact that the large centers of population therein provide ready market facilities, all tend to make this a splendid territory for the raising of Live Stock and for Dairying. The editors of this paper feel that its farmer readers are interested in these subjects, but are not taking as full advantage of the conditions as perhaps they might and accordingly it has seemed to them that a greater portion of THE PRACTICAL FARMER could with profit to our readers be devoted to Live Stock and Dairy interests.

To lend emphasis to this idea we are bringing out an enlarged Live Stock and Dairying Department in the form of this special section, and we want to ask our readers how they like it and if they want more of it? We cannot promise at this time that this Live Stock and Dairy Section will be made a permanent

and regular feature of the paper; we do, however, intend to put this department in a special section at least occasionally, and whether or not it becomes a regular feature of each issue will depend largely on your, our readers, wishes in the matter. We want to please you, we want to give you what you want and what you need in this paper, but it is hard for us to tell whether we are meeting your wishes and your needs unless you yourselves will tell us about it.

We ask you to look over this our initial Live Stock and Dairy Section carefully and critically and then we invite you to write us quite fully and frankly what you think of the idea and whether you wish this feature continued in the paper regularly, or at least at frequent intervals.

In this issue of the Live Stock and Dairy Section particular emphasis has been given to the Jersey breed of cattle; in future issues our idea is to discuss other breeds of cattle, horses, swine, sheep, etc., and to publish helpful articles on dairy management and methods and the diseases of live stock and their treatments. We ask your aid in the preparation of future issues by the contribution of articles on Live Stock and Dairying topics with which you have had experience, and suggestions as to topics on which you would like articles by experts. We solicit your

queries on points concerning your live stock farming which are puzzling you. In short, we want your co-operation and your assistance to make this enlarged department a success and a real help to you in your farming.

Now remember we want you to write us first, as to how you like our idea of enlarging the Live Stock and Dairy Department and whether you think we are justified in specializing along this line as an aid to you; secondly please tell us what you want us to put in this section—that is, what subjects you want treated particularly; third, write us articles detailing your experience in live stock raising or dairy management and methods; fourth, send in your queries any subject which concerns the live stock end of farming for answers in this section.

Now please sit right down and look over this Live Stock and Dairy Section carefully, then write us at once, whether you want more of this sort of thing. We want to make THE PRACTICAL FARMER your paper—your confidential friend and adviser—but we can't help you unless we know your needs. By writing us about this section you will help us to help you.

The Editors of The Practical Farmer.

In presenting these reasons for my preference among the dairy breeds, there is no desire to reflect upon the judgment of my friends who have seen fit to choose other than the Jersey. Every breed possesses distinctive characteristics, which are responsible for breed differences. Because the Jersey fits so admirably into our needs at Meridale Farms, we naturally give her the preference. The Meridale herd of pure-bred Jerseys was established nearly thirty years ago, and we have never had

Why I Prefer Jerseys

By R. E. HUTCHISON

Of Meridale Farms

and the results thus secured constitute a definite basis for comparisons.

At Chicago the Jerseys gave more milk, made more butter, made more cheese, and gave more solids other than butter fat, than any other breed. It required

less of their milk to make a pound of cheese or a pound of butter, and the cheese and butter were of higher quality than those made from the milk of other breeds. They produced a pound of butter at less cost than any other breed.

Again, at St. Louis the Jerseys proved to be the most economic producers of butter and of milk for all purposes of dairying. The Jerseys returned one pound of butter fat for every twelve pounds of nutriment consumed. The next most economic production

of any breed was one pound of butter for fourteen pounds of nutriment. The Jerseys yielded the most milk, the most butter fat, and the most solids not fat, in proportion to their live weight.

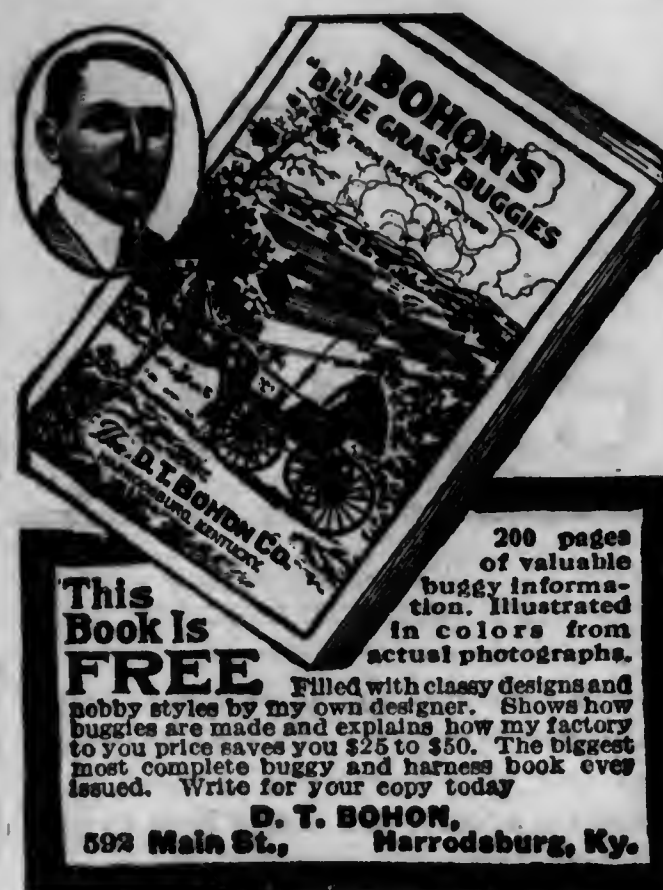
I have heard other breeders lay claim to superiority in profitable production for their favorites, but I have never seen actual figures in proof, secured under comparable conditions, exhibited by any other than Jersey followers.

The Jersey is pre-eminently a butter cow. Her reputation has been built upon her ability to produce a larger proportion of butter fat in her milk than can any other breed. We make Meridale butter at Meridale Farms, and sell it under our own print in the critical markets of Philadelphia and New York. We accordingly value the cow of rich quality—

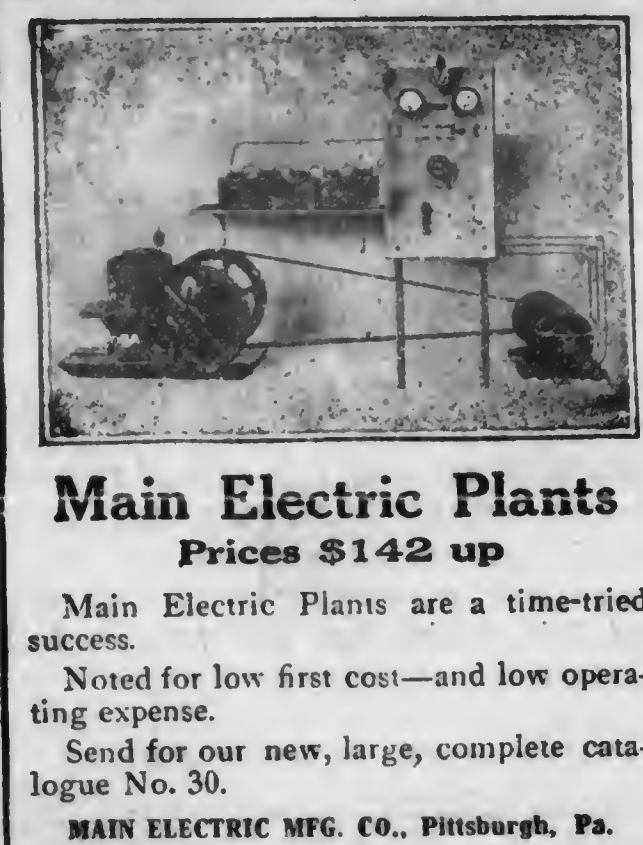


Fontaine Sayda's Queen 289820

Sire: Fontaine's King 65841. Dam: Sayda's Queen of Vanities 188033. Photographed at Two Years, Three Months. Register of Merit Record: 10,229 Lbs. Milk, 669 Lbs. Butter in One Year, Entering Class A. A. Property of Meridale Farms, Delaware County, N. Y.



BOHON'S
THE BOOK OF JERSEY CATTLE
200 pages of valuable
buggy information
illustrated in colors
from actual photographs.
This Book is FREE
Filled with classy designs and
peppy styles by my own designer. Shows how
buggies are made and explains how my factory
to you price saves you \$25 to \$50. The biggest
most complete buggy and harness book ever
issued. Write for your copy today
D. T. BOHON,
592 Main St., Harrodsburg, Ky.



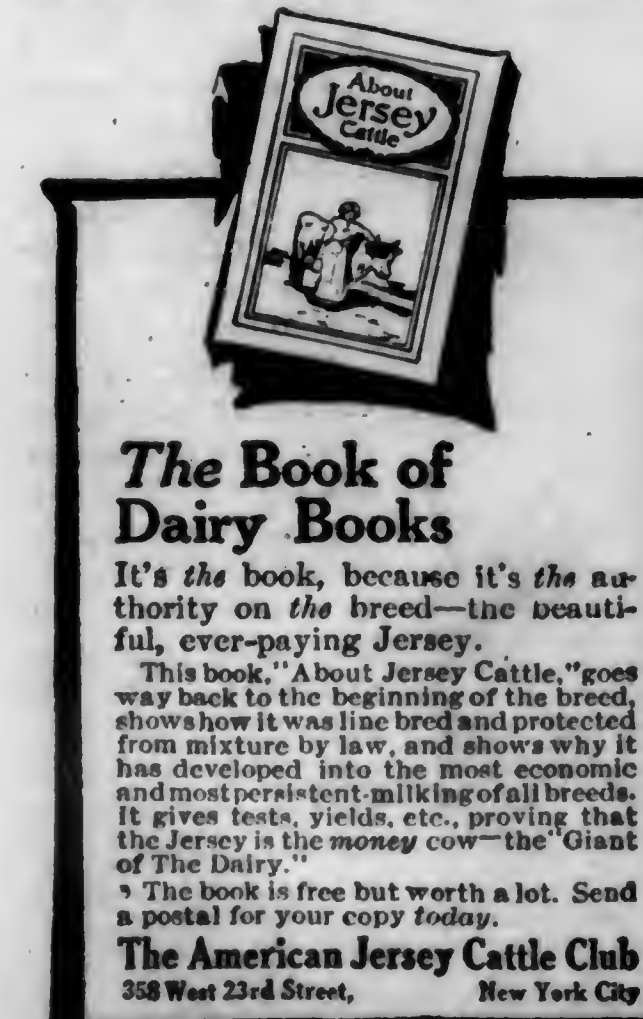
Main Electric Plants
Prices \$142 up
Main Electric Plants are a time-tried
success.
Noted for low first cost—and low opera-
ting expense.
Send for our new, large, complete cata-
logue No. 30.
MAIN ELECTRIC MFG. CO., Pittsburgh, Pa.



COLLAR PAD
GUARANTEED TO STOP
SORE SHOULDERS
Traub's Sanitary
Collar Pads, the
greatest invention
of the age. Money re-
funded if sore should-
ers are caused—guar-
anteed to cure sore
shoulders. Adjusted
to any horse collar.
Fills up hollow of
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Cost is very low. Ask
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\$10,000 BOND The Meyer Corporation
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Free Catalog in colors explains
how you can save
money on Farm Truck or Road
Wagon, also steel or wood wheels to fit
any running gear. Send for
it today.
Electric Wheel Co.
44 Elm St., Quincy, Ill.



The Book of Dairy Books
It's the book, because it's the au-
thority on the breed—the beau-
tiful, ever-paying Jersey.
This book, "About Jersey Cattle," goes
way back to the beginning of the breed,
shows how it was line bred and protected
from mixture by law, and shows why it
has developed into the most economic
and most persistent milking of all breeds.
It gives tests, yields, etc., proving that
the Jersey is the money cow—the "Giant
of the Dairy."
The book is free but worth a lot. Send
a postal for your copy today.
The American Jersey Cattle Club
358 West 23rd Street, New York City

more than that, we must demand her. We are told by an authority from the United States Department of Agriculture that one reason for the peculiarly fine body of the Meridale product is that the large globules of Jersey milk convey unusual solidity to the butter.

We have kept accurate herd records for nearly thirty years. The definite knowledge of Jersey capabilities thus secured has proved many things to us. It may be of interest to note the following yearly milk and butter averages established in the Meridale herd during the past six years. These figures are obtained from yearly tests supervised by Cornell University, and authenticated by the American Jersey Cattle Club. They represent tests conducted under normal farming conditions in our section of the

averages include the records of all tested cows, irrespective of age, realization of the absolute reliability of these figures for our guidance in breeding, because they were made by our own cows under our own care, leads us to put all the more confidence in the breed which has made possible this consistent advancement. We have never been shown an equal record made by a herd of any other breed under similar conditions.

In breeding live stock of any variety, the future of the herd depends upon the prepotency of the blood lines selected. The dependable prepotency of the Jersey is clearly demonstrated in records like the above, and is one of the most valuable characteristics of the breed.

But neither is the Jersey lacking in milk production, and were I to engage



THE IMPORTED JAP 75265

Sire: Eminent's Raleigh 69011 (Imp.). Dam: Karnak F 8798 C. Parish Prize, Royal Show, Island of Jersey, 1905; St. Clement's Prize, Island of Jersey, 1904-1905. Head of the Meridale Herd Since 1907. Sire of 21 Cows in the Register of Merit, all Tested at Meridale Farms. Full Brother to Raleigh's Pretty Karnak. Winner of Parish Prize and Two Certificates of Merit on the Island of Jersey, and Holder of Two Register of Merit Records in America. Property of Meridale Farms, Delaware County, N. Y.

Catskill mountains. We never fit a cow for a test, nor force her to produce to her limit for the sake of a large record. Our test cows receive only regular herd feed and care—a distinctive feature of Register of Merit work at Meridale Farms.

In 1910 we tested 52 cows, which showed an average product of 6,959 lbs. milk, 414 lbs. butter, per cow, the average fat test being 5.201%.

In 1911, our tested herd numbered 97 cows, and their average yield was 7,596 lbs. milk, 462 lbs. butter, the average fat test being 5.306%.

In 1912 we had 117 tested cows in the herd, their average product being 7,624 lbs. milk, 471 lbs. butter, per cow, and their average fat tests 5.261%.

In 1913 there were again 117 tested cows in the herd, but their average yield had increased to 7,894 lbs. milk, 509 lbs. butter, per cow, and their average fat test was 5.481%.

In 1914 we had 135 tested cows, their average yield being 7,982 lbs. milk, 512 lbs. butter, per cow, and their average fat tests 5.46%.

In 1915 there were 147 tested cows, and their average product was 7,994 lbs. milk, 518 lbs. butter, their fat tests averaging 5.44%.

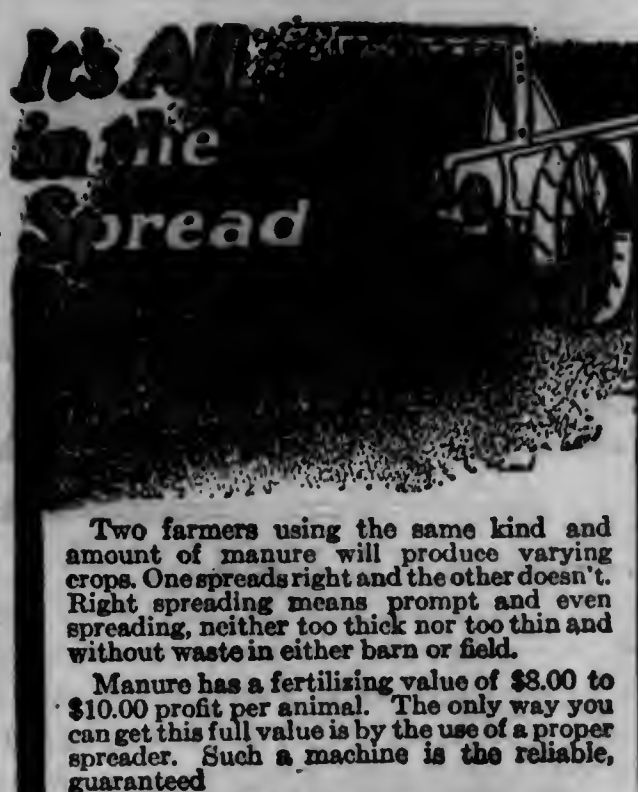
In other words, our tested herd has shown each year an improved quantity, as well as a steadily improving quality, while a most significant indication of the responsiveness of the Jersey is shown in the increase of over 1,000 lbs. milk and more than 100 lbs. of butter per cow per year in six years of constructive herd-building. The above

In the milk business I would not forsake the Jersey. Instance after instance could be related of Jersey milk routes thriving in spite of the keen competition of dairies of other breeds. I could add a long list of stories of Jersey dairy-men who have been persuaded to adopt other strains and were bitterly disappointed with the results.

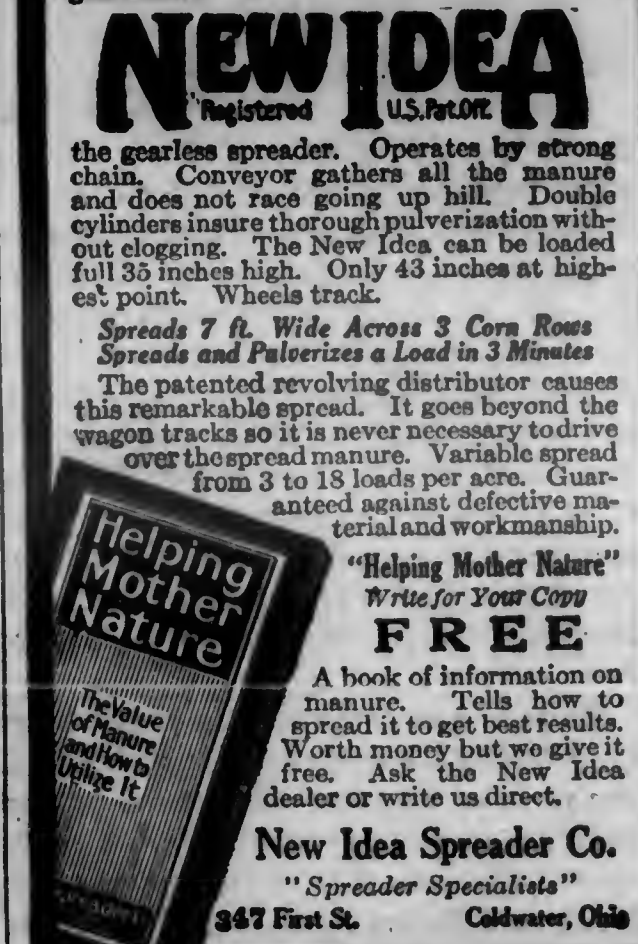
We had at Meridale Farms last year three Jersey cows which averaged practically 15,000 lbs. of milk per cow, or at the rate of over 40 pounds a day for an entire year. Eight cows averaged over 13,000 lbs. per cow; eighteen averaged over 12,000 lbs. per cow; thirty-five averaged over 11,000 lbs. per cow; and sixty-four cows, or 44% of the entire herd, averaged over 10,000 lbs. per cow per year.

The standards of milk supply in our large cities are steadily advancing, and there is constantly a demand for further improvement in quality of milk. To meet this condition many of the large milk concerns are paying a butter fat premium over their usual price, on a scale graduated in accordance with the butter fat percentage in excess of the standard required by law. More than this, the New York Department of Health has given notice that no dealer will be permitted to sell milk in that city which shows a test of less than 8.5% of "solids not fat."

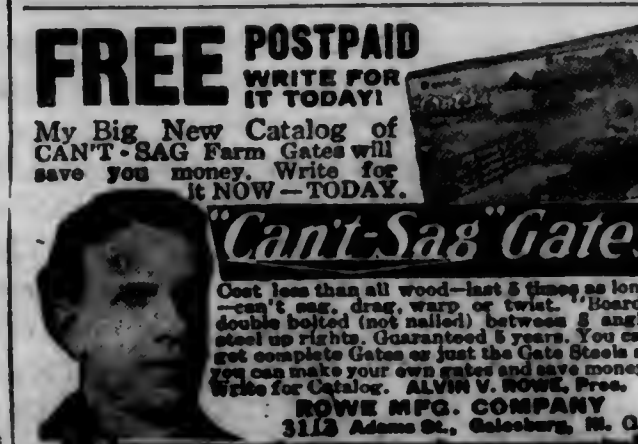
All these things indicate the trend of general opinion concerning the proper quality of milk for general consumption. Bulletin 155 of the United States Bureau of Animal Industry, conclusively indi-



NEW IDEA
Two farmers using the same kind and amount of manure will produce varying crops. One spreads right and the other doesn't. Right spreading means prompt and even spreading, neither too thick nor too thin and without waste in either barn or field.
Manure has a fertilizing value of \$3.00 to \$10.00 profit per animal. The only way you can get this full value is by the use of a proper spreader. Such a machine is the reliable, guaranteed.



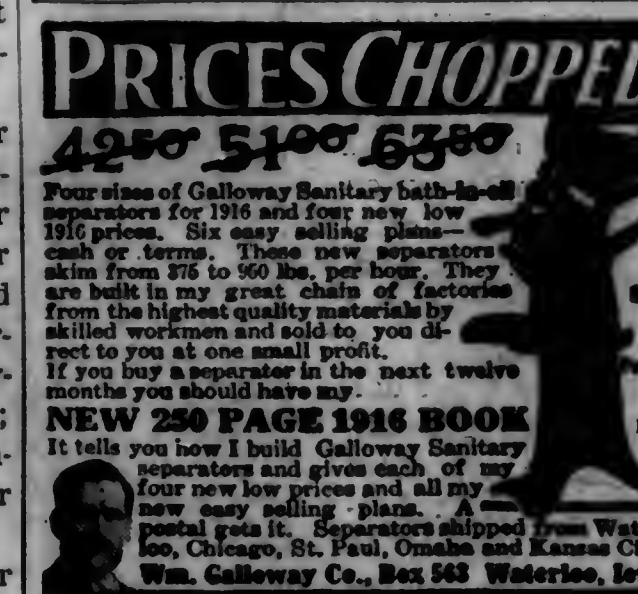
NEW IDEA
The gearless spreader. Operates by strong chain. Conveyor gathers all the manure and does not race going up hill. Double cylinders insure thorough pulverization without clogging. The New Idea can be loaded full 30 inches high. Only 43 inches at highest point. Wheels track.
Spreads 7 ft. Wide Across 3 Corn Rows Spreads and Fertilizes a Load in 3 Minutes
The patented revolving distributor causes this remarkable spread. It goes beyond the wagon tracks so it is never necessary to drive over the spread manure. Variable spread from 3 to 18 loads per acre. Guaranteed against defective material and workmanship.
Helping Mother Nature
Write for Your Copy **FREE**
A book of information on manure. Tells how to spread it to get best results. Worth money but we give it free. Ask the New Idea dealer or write us direct.
New Idea Spreader Co.
"Spreader Specialists"
247 First St. Caldwell, Idaho



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WRITE FOR IT TODAY!
My Big New Catalog of CANT-SAG Farm Gates will save you money. Write for it NOW—TODAY!
"Can't-Sag" Gates
Over 100 different styles—just 5 times as long as ordinary gates. Strong, durable, double bolted (not nailed) between 2 angle iron rails. Guaranteed 10 years. You can get complete Gates or just the Gate Bars or you can make your own gates. Get the "Can't-Sag" Gate Book free. Write for it NOW—TODAY!
BOWS MFG. COMPANY
3115 Adams St., Chicago, Ill. 9-24



PRICES CHOPPED
42¢ 51¢ 63¢
Four sizes of Galloway Sanitary Bathing Separators for 1916 and four new low 1915 prices. Six easy selling plans—cash or terms. These new separators skin from 75 to 90 lbs. per hour. They are built in my great chain of factories from the highest quality materials by skilled workmen and sold to you direct to you at one small profit. If you buy a separator in the next twelve months you should have my **NEW 250 PAGE 1916 BOOK**. It tells you how I build Galloway Sanitary separators and gives each of my four new low prices and all my new easy selling plans. Separators shipped from Waterloo, Chicago, St. Paul, Omaha and Kansas City. Wm. Galloway Co., Box 543 Waterloo, Iowa



CRUMB'S IMPROVED WARRIOR STANCHION
H. A. Moyer, Syracuse, N. Y., says "they" **SAVE COST**
in feed in one winter.
Send address for specifications of inexpensive yet sanitary cow stable to WALLACE B. CRUMB, Sec. 22, Forestville, Conn.



IT PAYS TO DEHORN
Dehorned cows give more milk; take less room; are gentle and easily handled. Dehorned steers fatten quicker and are not dangerous. Horns cost money; remove them with the new **Improved Keystone Dehorner**—quickest, cleanest, strongest and most satisfactory. Clean, sharp and sliding cut; no crushing; no bruising. Money back guarantee. Good for booties.
H. T. Phillips, Box 113, Fenner, Pa.

cates the superior quality of Jersey milk, which is the highest both in fat and in solids not fat of all the dairy breeds.

To July 31, 1915, a total of 4,297 cows had been tested under the supervision of the American Jersey Cattle Club. They were not representatives specially selected for testing and chosen after expert inspection, but were entered for testing from practically all sections of the country, and may be taken as honestly representative of the breed in practical dairy performance. These 4,297 cows averaged 7,784 lbs. milk and 459 lbs. butter per cow, and their fat tests averaged 5.34%. Of this number 1,461 were cows five years old or over, and they averaged 9,087 lbs. milk, 564 lbs. butter, per cow per year.

Further, in my observation, the Jersey breeds true to type more certainly than any other strain of dairy cattle. "Like begets like, or the likeness of some ancestor," is a precept peculiarly fitting to Jersey blood. This is explicable in part by the care taken for many generations to safeguard the purity of the breed. For at least two centuries, Jerseys have been kept free from crossing with other breeds on their native island, to which no cattle are imported except for immediate slaughter. In America no breed association guards its herd records more jealously than does the American Jersey Cattle Club. This long maintained purity of blood has fixed the breed characteristics of the Jersey, and has helped to establish the renowned prepotency of the breed. Her beauty of form and intelligent response to human care, made the Jersey famous long before her practical dairy value was fully realized.

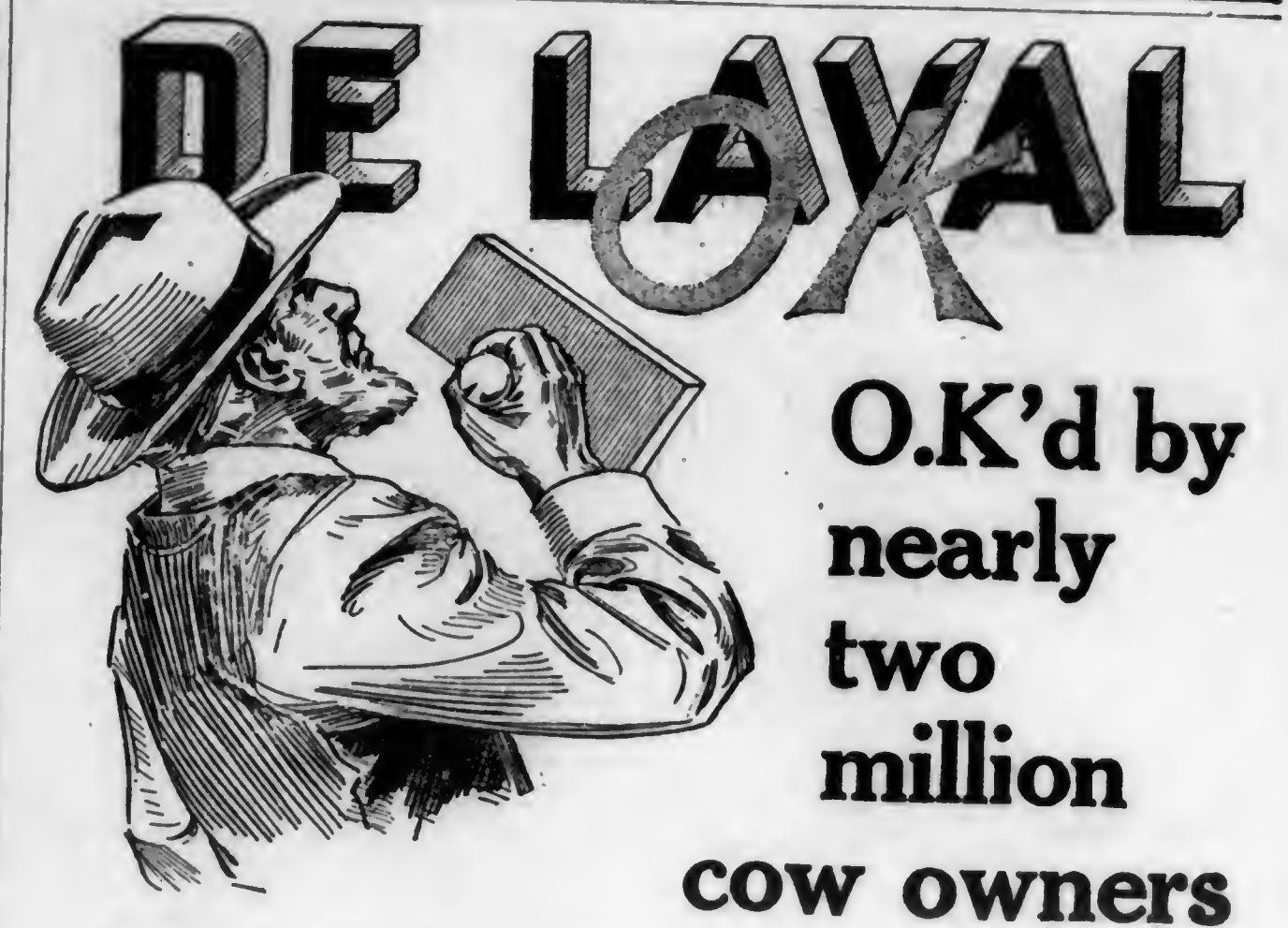
Some of her best friends, perhaps, have unwittingly injured her reputation

months, and Jerseys producing at 20 years or more are not unusual. We have at Meridale Farms a cow which holds the world's record for her age, making 13,380 lbs. milk, 890 lbs. butter at 12 years old. Another of our cows entered the Register of Merit in her seventeenth year.

Persistence is a Jersey characteristic of particular value to the dairyman. It is not the seven-day test nor the thirty-day test which determines the dairy value of a cow, but it is her ability to produce profitably during a prolonged period of performance. I read the other day of a Jersey grade cow in South Dakota which had milked every day for upward of twenty years. We have at Meridale Farms cows which have not been dry in six years or more. Such performances definitely demonstrate the inaccuracy of any charge that the Jersey is lacking in constitutional vigor!

Her adaptability to all sorts of climatic conditions is another important recommendation. Originating on a small island in the English Channel, in a climate surprisingly equable, she has been distributed to widely separated countries and in all of them is steadily winning her way by her dependability. She has proved a satisfactory dairy cow in the Canadian Northwest, where a few months ago a Jersey produced practically 1,000 lbs. of butter in a year. She covers all sections of the United States, and is found in sections down to tropical America. She is the favored cow of Denmark, England, Australia, New Zealand and Canada. Japan is just awakening to a realization of her superiority.

To win permanent recognition at the hands of American dairymen, a breed must prove itself dependable in the stables of the practical farmer. I have found the Jersey in the palatial stables



DE LAVAL
O.K'd by nearly two million cow owners

MORE De Laval separators are being sold than all other makes combined—nearly 2,000,000 are now in use. Year by year an ever increasing proportion of farm separator buyers reach the conclusion that the De Laval is the only cream separator they can afford to buy or use.

In fact, about the only excuse ever offered for buying any other separator nowadays is that its first cost is a little less than the De Laval.

But they soon find out that the last cost of a cream separator is what really counts, and when they realize that the De Laval gives the most and best service for the money they buy a De Laval.

Over 40,000 users of inferior machines discarded them for De Laval during the past year in the United States and Canada alone.

Better be right in the first place and start with a De Laval.

THE DE LAVAL SEPARATOR CO.
165 Broadway, New York 29 E. Madison St., Chicago
50,000 BRANCHES AND LOCAL AGENCIES THE WORLD OVER

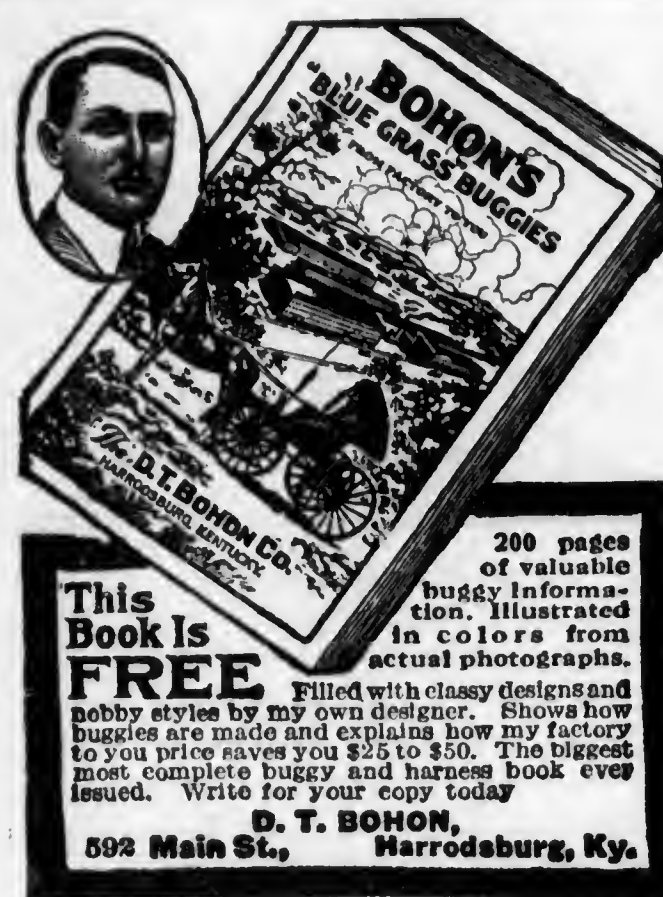
Meridale Jerseys

For nearly thirty years Meridale Jerseys have been famous for their proven superiority both in dairy type and dairy performance. We have never offered so fine a lot of youngsters of both sexes as are available from the herd this winter. Write for detailed descriptions.

AYER & McKINNEY
300 Chestnut Street, Philadelphia, Pa.



"Yes, It's A Natco"
As you are riding through the country, take special notice of the silos along the way. Throughout the fertile Middle West country and in the East as well, in every prosperous farming section, wherever stock farming or dairying is done, will be noted the vitrified tile silos. And in the majority of such cases a closer inspection will identify the silo as a **Natco Imperishable Silo**.
"The silo that lasts for generations"
—so distinctive in appearance you'll know it at once. The handsome glazed tile, contrasting with the white markings of mortar, and our inspection shows our convenient door front, the convenient steps of galvanized iron pipe which, with the steel reinforcement, holds the silo in a grip of steel, the perfectly smooth walls, and last and most important, the sweet, juicy ensilage in all decayproof, fireproof and frost-resisting. In daily use by the following State Experiment Stations:
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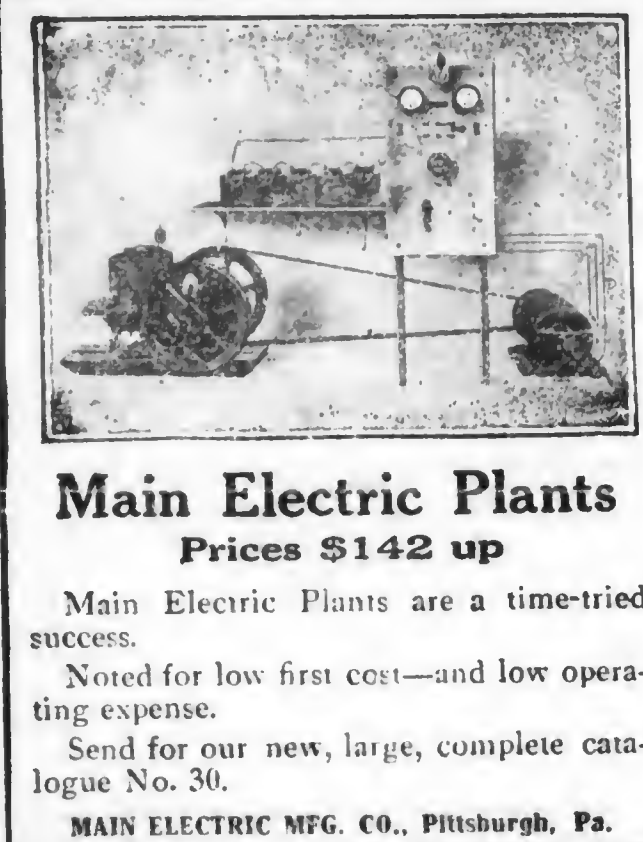


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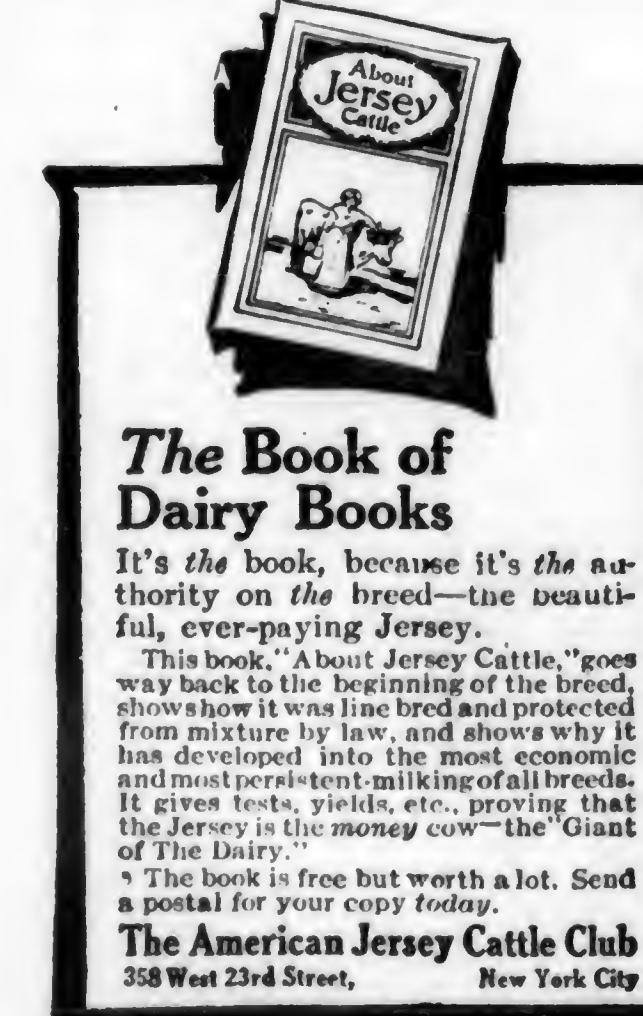
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The Book of Dairy Cows

It's the book, because it's the authority on the breed—the beautiful, ever-paying Jersey.

This book, "About Jersey Cattle," goes way back to the beginning of the breed, shows how it was line bred and protected from mixture by law, and shows why it has developed into the most economic and most persistent milking of all breeds. It gives tests, yields, etc., proving that the Jersey is the money cow—the "Giant of the Dairy."

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The American Jersey Cattle Club
358 West 23rd Street, New York City

more than that, we must demand her. We are told by an authority from the United States Department of Agriculture that one reason for the peculiarly fine body of the Meridale product is that the large globules of Jersey milk convey unusual solidity to the butter.

We have kept accurate herd records for nearly thirty years. The definite knowledge of Jersey capabilities thus secured has proved many things to us. It may be of interest to note the following yearly milk and butter averages established in the Meridale herd during the past six years. These figures are obtained from yearly tests supervised by Cornell University, and authenticated by the American Jersey Cattle Club. They represent tests conducted under normal farming conditions in our section of the

averages include the records of all tested cows, irrespective of age, realization of the absolute reliability of these figures for our guidance in breeding, because they were made by our own cows under our own care, leads us to put all the more confidence in the breed which has made possible this consistent advancement. We have never been shown an equal record made by a herd of any other breed under similar conditions.

In breeding live stock of any variety, the future of the herd depends upon the prepotency of the blood lines selected. The dependable prepotency of the Jersey is clearly demonstrated in records like the above, and is one of the most valuable characteristics of the breed.

But neither is the Jersey lacking in milk production, and were I to engage



THE IMPORTED JAP 75265

Sire: Eminent's Raleigh 69011 (Imp.). Dam: Karnak F 8798 C. Parish Prize, Royal Show, Island of Jersey, 1905; St. Clement's Prize, Island of Jersey, 1904-1905. Head of the Meridale Herd Since 1907. Sire of 21 Cows in the Register of Merit, all Tested at Meridale Farms. Full Brother to Raleigh's Pretty Karnak. Winner of Parish Prize and Two Certificates of Merit on the Island of Jersey, and Holder of Two Register of Merit Records in America. Property of Meridale Farms, Delaware County, N. Y.

Catskill mountains. We never fit a cow for a test, nor force her to produce to her limit for the sake of a large record. Our test cows receive only regular herd feed and care—a distinctive feature of Register of Merit work at Meridale Farms.

In 1910 we tested 52 cows, which showed an average product of 6,959 lbs. milk, 414 lbs. butter, per cow, the average fat test being 5.201%.

In 1911, our tested herd numbered 97 cows, and their average yield was 7,596 lbs. milk, 462 lbs. butter, the average fat test being 5.306%.

In 1912 we had 117 tested cows in the herd, their average product being 7,624 lbs. milk, 471 lbs. butter, per cow, and their average fat tests 5.261%.

In 1913 there were again 117 tested cows in the herd, but their average yield had increased to 7,894 lbs. milk, 509 lbs. butter, per cow, and their average fat test was 5.481%.

In 1914 we had 135 tested cows, their average yield being 7,982 lbs. milk, 512 lbs. butter, per cow, and their average fat tests 5.46%.

In 1915 there were 147 tested cows, and their average product was 7,994 lbs. milk, 518 lbs. butter, their fat tests averaging 5.44%.

In other words, our tested herd has shown each year an improved quantity, as well as a steadily improving quality, while a most significant indication of the responsiveness of the Jersey is shown in the increase of over 1,000 lbs. milk and more than 100 lbs. of butter per cow per year in six years of constructive herd-building. The above

In the milk business I would not forsake the Jersey. Instance after instance could be related of Jersey milk routes thriving in spite of the keen competition of dairies of other breeds. I could add a long list of stories of Jersey dairymen who have been persuaded to adopt other strains and were bitterly disappointed with the results.

We had at Meridale Farms last year three Jersey cows which averaged practically 15,000 lbs. of milk per cow, or at the rate of over 40 pounds a day for an entire year. Eight cows averaged over 13,000 lbs. per cow; eighteen averaged over 12,000 lbs. per cow; thirty-five averaged over 11,000 lbs. per cow; and sixty-four cows, or 44% of the entire herd, averaged over 10,000 lbs. per cow per year.

The standards of milk supply in our large cities are steadily advancing, and there is constantly a demand for further improvement in quality of milk. To meet this condition many of the large milk concerns are paying a butter fat premium over their usual price, on a scale graduated in accordance with the butter fat percentage in excess of the standard required by law. More than this, the New York Department of Health has given notice that no dealer will be permitted to sell milk in that city which shows a test of less than 8.5% of "solids not fat."

All these things indicate the trend of general opinion concerning the proper quality of milk for general consumption. Bulletin 155 of the United States Bureau of Animal Industry, conclusively indi-



It's All in the Spread

Two farmers using the same kind and amount of manure will produce varying crops. One spreads right and the other doesn't. Right spreading means prompt and even spreading, neither too thick nor too thin and without waste in either barn or field.

Manure has a fertilizing value of \$3.00 to \$10.00 profit per animal. The only way you can get this full value is by the use of a proper spreader. Such a machine is the reliable, guaranteed.

NEW IDEA
REGISTERED U.S. PATENT

the gearless spreader. Operates by strong chain. Conveyor gathers all the manure and does not race going up hill. Double cylinders insure thorough pulverization without clogging. The New Idea can be loaded full 35 inches high. Only 43 inches at highest point. Wheels track.

Spreads 7 ft. Wide Across 3 Corn Rows Spreads and Fertilizes a Load in 3 Minutes

The patented revolving distributor causes this remarkable spread. It goes beyond the wagon tracks so it is never necessary to drive over the spread manure. Variable spread from 3 to 18 loads per acre. Guaranteed against defective material and workmanship.

Helping Mother Nature
Write for Your Copy **FREE**

A book of information on manure. Tells how to spread it to get best results. Worth money but we give it free. Ask the New Idea dealer or write us direct.

New Idea Spreader Co.
"Spreader Specialists"
347 First St. Coldwater, Ohio



FREE POSTPAID
WRITE FOR IT TODAY!

My Big New Catalogue of CANT-SAG Farm Gates will save you money. Write for it NOW—TODAY!

"Can't-Sag" Gates

Cost less than all wood—last 5 times as long as wood. They are made of heavy steel, double bolted (not nailed) between 8 angle steel uprights. Guaranteed 5 years. You can get complete Gates or just the Gate Stakes so you can make your own gates and save money. Write for Catalogue. ALVIN COMPANY, 3113 Adams St., Galesburg, Ill. 625

PRICES CHOPPED!
4250 5100 6350

Four sizes of Galloway Sanitary bath-toilet separators for 196 and four new low 1916 prices. Six easy selling plans—cash or terms. These new separators are skinned from \$15 to \$60 lbs. per hour. They are built in my great chain of factories from the highest quality materials by skilled workmen and sold to you direct to you at one small profit.

If you buy a separator in the next twelve months you should have my **NEW 250 PAGE 1916 BOOK** It tells you how I built Galloway Sanitary separators and gives each of my four new low prices and all my new easy selling plans. A complete postal gets it. Separators shipped from Waterloo, Ontario, St. Paul, Omaha and Kansas City. Wm. Galloway Co., Box 563 Waterloo, Iowa

CRUMB'S IMPROVED WARRIOR STANCHION

H. A. Moyer, Syracuse, N. Y., says "they **SAVE COST** in feed in one winter." Send address for specifications of inexpensive yet sanitary cow stable to **WALLACE H. CRUMB, Box 18, Forestville, Conn.**

IT PAYS TO DEHORN

Dehorned cows give more milk; take less room; are gentler and easily handled; Dehorned steers fatten quicker and are not dangerous to men. Horns cost money; remove them with the new **Improved Keystone Dehorner**—quickest, cleanest, strongest and most satisfactory. Clean, sharp and sliding cut; no crushing; no bruising. Money back guarantee. Read for booklet. **M. T. Phillips, Box 119, Pecos, Pa.**

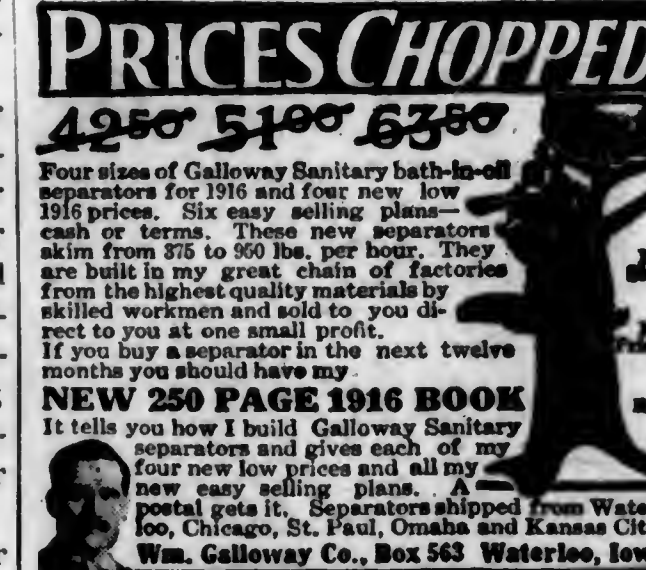


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cates the superior quality of Jersey milk, which is the highest both in fat and in solids not fat of all the dairy breeds.

To July 31, 1915, a total of 4,297 cows had been tested under the supervision of the American Jersey Cattle Club. They were not representatives specially selected for testing and chosen after expert inspection, but were entered for testing from practically all sections of the country, and may be taken as honestly representative of the breed in practical dairy performance. These 4,297 cows averaged 7,784 lbs. milk and 489 lbs. butter per cow, and their fat tests averaged 5.34%. Of this number 1,461 were cows five years old or over, and they averaged 9,087 lbs. milk, 564 lbs. butter, per cow per year.

Further, in my observation, the Jersey breeds true to type more certainly than any other strain of dairy cattle. "Like begets like, or the likeness of some ancestor," is a precept peculiarly fitting to Jersey blood. This is explicable in part by the care taken for many generations to safeguard the purity of the breed. For at least two centuries, Jerseys have been kept free from crossing with other breeds on their native island, to which no cattle are imported except for immediate slaughter. In America no breed association guards its herd records more jealously than does the American Jersey Cattle Club. This long maintained purity of blood has fixed the breed characteristics of the Jersey, and has helped to establish the renowned prepotency of the breed. Her beauty of form and intelligent response to human care, made the Jersey famous long before her practical dairy value was fully realized.

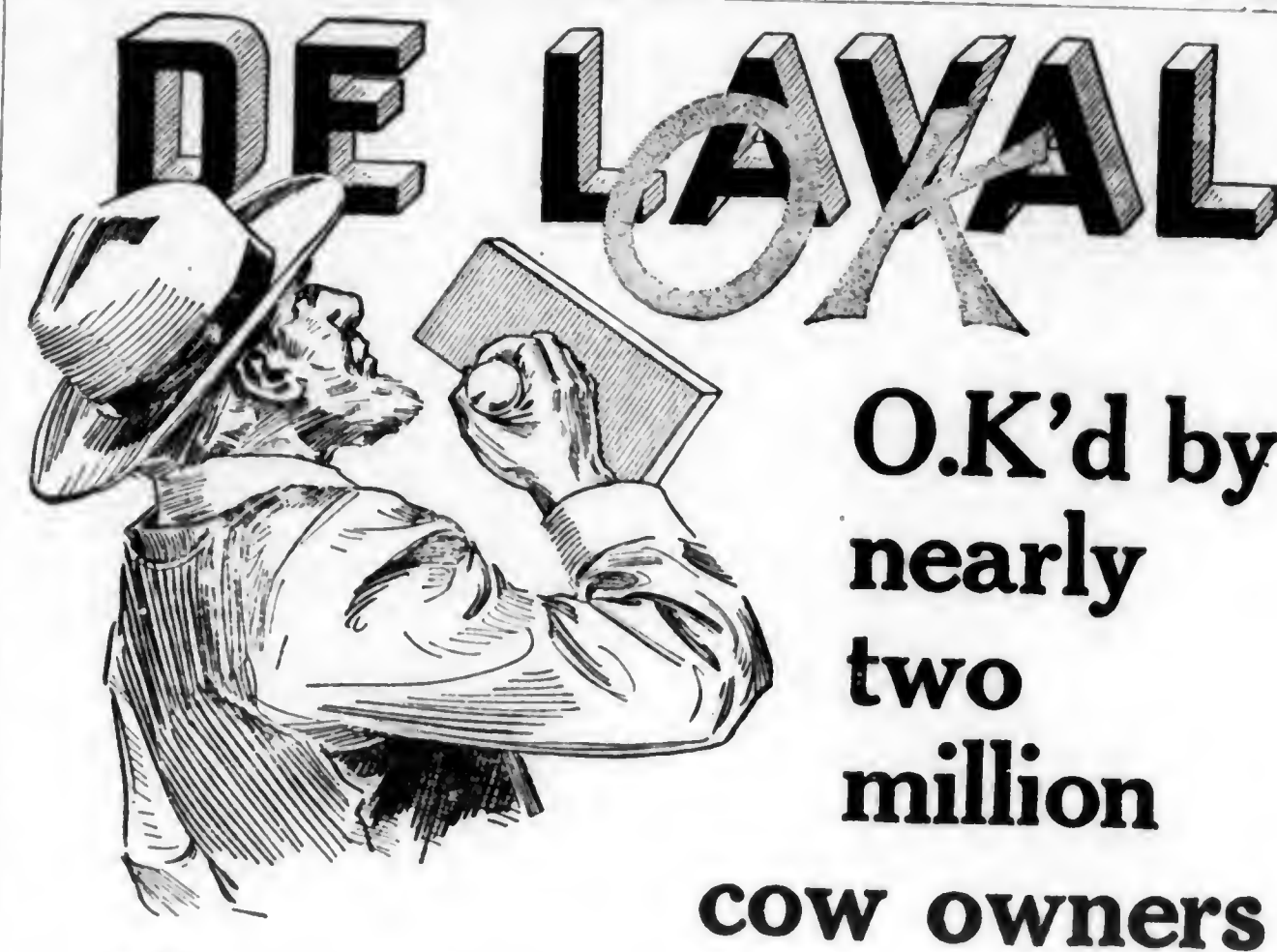
Some of her best friends, perhaps, have unwittingly injured her reputation

months, and Jerseys producing at 20 years or more are not unusual. We have at Meridale Farms a cow which holds the world's record for her age, making 13,380 lbs. milk, 890 lbs. butter at 12 years old. Another of our cows entered the Register of Merit in her seventeenth year.

Persistence is a Jersey characteristic of particular value to the dairyman. It is not the seven-day test nor the thirty-day test which determines the dairy value of a cow, but it is her ability to produce profitably during a prolonged period of performance. I read the other day of a Jersey grade cow in South Dakota which had milked every day for upward of twenty years. We have at Meridale Farms cows which have not been dry in six years or more. Such performances definitely demonstrate the inaccuracy of any charge that the Jersey is lacking in constitutional vigor!

Her adaptability to all sorts of climatic conditions is another important recommendation. Originating on a small island in the English Channel, in a climate surprisingly equable, she has been distributed to widely separated countries and in all of them is steadily winning her way by her dependability. She has proved a satisfactory dairy cow in the Canadian Northwest, where a few months ago a Jersey produced practically 1,000 lbs. of butter in a year. She covers all sections of the United States, and is found in sections down to tropical America. She is the favored cow of Denmark, England, Australia, New Zealand and Canada. Japan is just awakening to a realization of her superiority.

To win permanent recognition at the hands of American dairymen, a breed must prove itself dependable in the stables of the practical farmer. I have found the Jersey in the palatial stables



DE LAVAL

O.K'd by nearly two million cow owners

MORE De Laval separators are being sold than all other makes combined—nearly 2,000,000 are now in use. Year by year an ever increasing proportion of farm separator buyers reach the conclusion that the De Laval is the only cream separator they can afford to buy or use.

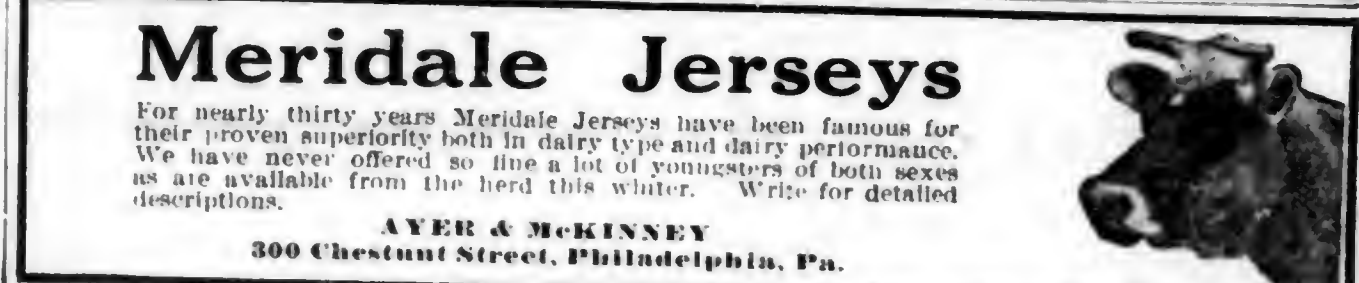
In fact, about the only excuse ever offered for buying any other separator nowadays is that its first cost is a little less than the De Laval.

But they soon find out that the last cost of a cream separator is what really counts, and when they realize that the De Laval gives the most and best service for the money they buy a De Laval.

Over 40,000 users of inferior machines discarded them for De Laval during the past year in the United States and Canada alone.

Better be right in the first place and start with a De Laval.

THE DE LAVAL SEPARATOR CO.
165 Broadway, New York 29 E. Madison St., Chicago
50,000 BRANCHES AND LOCAL AGENCIES THE WORLD OVER



Meridale Jerseys

For nearly thirty years Meridale Jerseys have been famous for their proven superiority both in dairy type and dairy performance. We have never offered so fine a lot of youngsters of both sexes as are available from the herd this winter. Write for detailed descriptions.

AYER & MCKINNEY
300 Chestnut Street, Philadelphia, Pa.



"Yes, It's A Natco"

As you are riding through the country, take special notice of the silos along the way. Throughout the fertile Middle West country and in the East as well, in every prosperous farming section, wherever stock farming or dairying is done, will be noted the vitrified tile silos. And in the majority of such cases a closer inspection will identify the silo as a

Natco Imperishable Silo
"The silo that lasts for generations"

—so distinctive in appearance you'll know it at once. The handsome glazed tile, contrasting with the white markings of mortar, and our inspection shows our convenient door front, the convenient steps of galvanized iron pipes which, with the steel reinforcement, holds the silo in a grip of steel, the perfectly smooth walls, and last and most important, the sweet, juicy ensilage in all parts. Here's the silo that's windproof, decayproof, fireproof and frost-resisting. In daily use by the following State Experiment Stations:—

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Preparing Horses for Spring Work

By J. H. REED, V. S.

There are many horses that have spent the last few months in partial or complete idleness on somewhat low rations, and there are also many young horses three or four years old which have spent their lives so far under like conditions and without having been taught to go in harness. A large percentage of each class will soon be called upon to perform the functions of work horses in the field. While the food consumed during idleness has been in proportion to the energy spent, and the horses look reasonably well, have a fair amount of flesh and spirits and their general appearance probably indicates that they are in fair condition for work, such is not the case. By reason of want of function their muscular, respiratory and digestive systems are all weak, and unless intelligent measures are adopted to give them tone before they are asked to perform steady and hard work, unsatisfactory service, and probably serious results will follow. The preparation should be systematic. It will require time and trouble, but the results will justify the time and cost to obtain them.

Teamsters, or those at present in charge of the horses, should at once commence a regular system of giving daily exercise or light work. At first the daily exercise should be light—four or five miles of gentle exercise or one or two hours of light work. The exercise or work should be gradually increased as the horses become accustomed to it. The grain ration should be increased in proportion to the work, and if the horses have been fed on straw as a roughage, the change to hay should be made gradually. It will be wise to give the exercise in the harness that the horses will wear during the spring work. This applies especially to the collars.

Shoulder trouble is probably more common than any other trouble in horses that are put to steady work without preparation after a long rest. Each horse should have his own collar and it should fit well. It is seldom we see two necks and shoulders of just the same size and conformation; hence it is seldom that the same collar will fit two horses. When a collar is used on only one horse there is a tendency for it to conform to the peculiarities of the con-

great country of ours should have an enemy is more than I can tell, for there is plenty of room in America for all the pure-bred cows of all breeds which we can produce for many hundred years to come.

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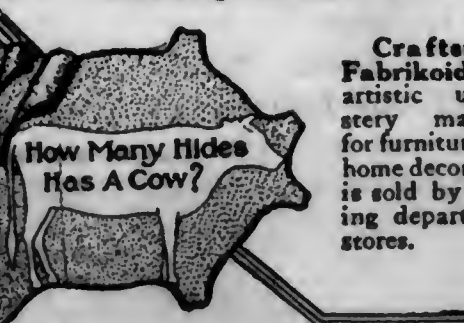
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come dry, and also allow the shoulders to become thoroughly dry, and before the collar is again put on both should be well rubbed and cleaned. Care should also be taken not to allow the horse's mane between the collar and shoulder. When horses have not been properly fitted for work it is necessary to allow them to rest occasionally during the first few days, and during the periods of rest it is good practice to lift the collars forward on their necks to allow the air to come in contact with the shoulders. In such cases the collars should be carefully replaced and the mane combed forward from under it before the team is started. When reasonable time is spent daily in preparing horses for regular work, and, as stated, the grain ration gradually increased, the systems already mentioned gradually acquire tone, and when time becomes valuable the horse is prepared to do a full day's work with satisfaction and reasonable safety.

Of course, during preparation the teamster must not neglect regular grooming. In many cases the classes of horses under discussion have long, heavy coats of hair. In such cases it is wise to clip them as soon as the state of the weather will admit of its being done with safety. At all events the parts of the shoulders under the collar should be clipped. A clipped horse requires more attention to avoid chills than an unclipped one, but, especially in the spring, a horse with a long coat will do more work with much greater comfort to both himself and his driver. The advisability of clipping under any conditions, is probably debatable, but, in our opinion there can be no question about it in the circumstances under discussion, provided the teamster exercises reasonable care and judgment in protecting his horse when the weather becomes cold, raw or wet, as it occasionally does in the spring. The preparation of unhandled or unbroken colts for work, should, of course, be on the same lines as the foregoing, but is even more imperative. We all know that the practice of allowing a colt to reach workable age without any handling or education, and then hitching him with an old horse, or, in some cases, with another green one and putting them to work at once, is too common. He, like the horse that has spent a few months in idleness, is totally unfitted for work, and in addition, totally uneducated, hence the results cannot be satisfactory. A few weeks regular handling before real work commences is eminently necessary in these cases. Even in heavy horses the ultimate value of an animal depends, to a great extent, upon his manners and early education. Hence time spent in education has a twofold benefit, in the fact that it is educating the colt and at the same time fitting him to perform the functions of a horse.

The production of wool in the United States in 1915 is estimated by the Bureau of Crop Estimates as 288,777,000 pounds as compared with 290,192,000 in 1914, and 296,175,000 in 1913.

Average price to producers for unwashed wool has averaged about 23.4 cents per pound as compared with 18.4 cents in 1914, and 16.7 cents in 1913.

The approximate total value of the live stock on the farms of Pennsylvania is \$167,843,000 according to statistics just announced by the Department of Agriculture.

Keep milk as nearly clean as possible before straining, as any particle of dirt dissolved in the milk will find its flavor in the butter.

Digestive Diseases of the Ox

DYSENTERY

Dysentery, or bloody flux, is inflammation of the lining membrane of the intestines accompanied by ulceration. It occurs as a sequel to protracted diarrhea, or may originate as a primary disease from exposure to cold, feeding on coarse, innutritious food, and almost any debilitating influence which acts slowly but persistently. It may occur as an after effect of poisonous agents.

SYMPTOMS.—Sometimes the disease is acute, but more often chronic. In acute cases there is increase of temperature and more or less well marked abdominal pains in the early stages. The patient stands with arched back, and strains almost constantly, passing only a small amount of watery matter tinged with blood or containing blood clots. In some cases little vesicles or blisters are noticed on the mucous membrane of the nostrils. As the disease advances signs of abdominal pain increase in intensity, rapid emaciation takes place and the patient sinks and dies from exhaustion.

In the chronic form the symptoms are those of extreme debility; the patient becomes hide-bound; emaciation is generally soon well marked, coat becomes dry and staring; the mucous membranes become pale, eyes sunken, ears pendulous, eyes dull and glazed; the anus becomes relaxed and constantly discharges small quantities of a sanguineous substance, and the rectum generally protrudes a little. The back is arched, the gait staggers, and in many cases pressure upon the loins appears to cause pain. When faeces are passed in quantity the odor is highly offensive, they are sanguineous, glairy, bloody and viscid in consequence of the amount of mucus they contain. The patient may remain in this state for a very long time, but the appetite, of course, almost gone, but thirst may be excessive. When at length death occurs or the patient is slaughtered, a post mortem often reveals that the stomach, as well as the intestines, was involved. The fourth stomach has its

mucous membrane reddened, with a gelatinous effusion into its substance, and into the sub-mucous tissue. The small intestines are sometimes somewhat similarly affected, but not infrequently they present only a slight congestion of the mucous membrane. The large intestine is usually the principal seat of the disorder. It shows highly congested spots and congestive streakings, giving it a bluish color. Ulcerations are also generally present, penetrating the mucous membrane more or less deeply. The contents have an offensive odor and are tinged with blood.

TREATMENT.—In acute attacks treatment is often ineffective, which, perhaps, is due to the fact that the diseased mucous membrane of the intestines is in such a state that absorption of medicines cannot readily take place. Treatment should be largely that recommended for acute diarrhea, except that in no case should a purgative or laxative be administered, even in the early stages. Large doses of opium, such as 2 drams of powdered opium, or 2 ounces of tincture (laudanum) with 4 drams each of catechu and prepared chalk, should be given three or four times daily. It is good practice to give astringent injections per rectum, as alum water, one ounce to a gallon of warm water. The patient's strength must be kept up and the heart's action stimulated by the administration of nutrients and stimulants, as a quart of boiled flax seed and 2 ounces of sweet spirits of niter or ½ pint of whiskey every few hours.

Careful nursing is absolutely necessary, though some cases are so tedious that the attendant is liable to become discouraged and inclined to allow matters to take their own course. The food must be of first-class quality, dry and nutritious. While a large percentage of cases prove fatal even under the most energetic treatment, cases of recovery are not rare, hence efforts to cure should always be adopted.

The Feeding Value of Molasses

By F. B. HILLS, of Delaware Experiment Station

Both cane and beet molasses have come into quite common use for varied purposes in feeding farm animals. Beet molasses is used principally in the beet sugar districts, except when it is a part of one of the several so-called molasses feeds now found in the market. Cane molasses, or blackstrap as it is sometimes called, while used extensively throughout the sugar districts of the South as a major part of rations, is being utilized to some extent by representative feeders in all sections of the United States.

The molasses from the beet sugar factories is purgative in its effect on most animals, due probably to some of the alkali salts which are a part of its high ash content. According to the average of analyses made by Henry and Morrison, it contains about 1 per cent. digestible protein and 60 per cent. of digestible carbohydrates, nearly all sugar. The same authors have reviewed some European data which indicate that satisfactory results have been obtained from feeding horses over 4 pounds of beet molasses per 1000 pounds live weight, the molasses being mixed with bran and fed in conjunction with corn and an unlimited allowance of hay. One pound of molasses replaced 0.78 pound of corn.

For beef cattle and sheep, best results have been obtained by pouring it over and mixing it with cut or shredded hay,

straw or corn stover. It has a low value, however, for furnishing the necessary carbohydrates in a balanced ration.

Cane molasses has about the same content of carbohydrates as has the beet product, nearly all of which is digestible. The cane molasses is sweeter and more palatable than that from the beet, and is greatly liked by all farm animals. It is not purgative and therefore may be fed in larger quantities.

The Louisiana Station has reported that an average of about 10 pounds, and sometimes as high as 20 pounds, of cane molasses is fed to each horse or mule on many plantations throughout the sugar cane districts of the South (the range being from 2 to 21 pounds). The animals which receive molasses are less inclined to digestive disorders, and therefore have greater capacity for work than those not having it in their ration. The fact that in the South it is one of the cheapest sources of carbohydrates available would indicate that for the northern feeders the cost of the molasses is the principal factor in determining its desirability as a source of carbohydrates in rations. From 2 to 4 pounds daily, when fed in addition to the regular ration, will help to keep a horse in good condition, both in appearance and in digestion. Many feeders maintain that when horses receive a small amount of molasses there is an expulsion of all

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the so-called stomach worms present, and the horses remain free from the parasites while receiving it. It is probably due to the increased vigor of the animals and the fact that there seems to be a direct relation between the physical condition of an animal and its susceptibility to these parasites. There is no better tonic for horses out of condition than a small amount of molasses.

As with horses, beef cattle have been economically fed cane molasses in the South, where it is low in cost. One may conclude from published data on the subject that a small amount may be profitably used by northern feeders of beef cattle, either to facilitate the consumption of unpalatable roughages or to stimulate lagging appetites.

For dairy cows, molasses may be used for the same purposes as for beef cattle. The common practice among dairymen is to mix molasses with a little water

and spread it over the roughage, or mix it thoroughly with the grain mixture at time of feeding. Its greatest use is to stimulate cows being fed for high production to consume a greater amount of feed by increasing its palatability. Lindsey, of the Massachusetts Station, has observed in some of his feeding work that when added to a basal ration, molasses may cause a depression in its digestibility. Dairy cows may receive as high as 4 pounds a day added to the basal ration, as an appetizer purely and not in any sense as a substitute for the other carbohydrate foods of the ration.

Feeders in any section where molasses is not to be had cheaply will find its use economical only in so far as it is an appetizer for increasing the consumption of unpalatable food, for improving animals out of condition, for maintaining a high standard of finish or for fitting animals quickly for show or sale.



THE GRAND CHAMPION DAIRY COW. SOPHIE 19th OF HOOD FARM 189748.

Register of Merit test, one year, 17,557 lbs. 12 oz. milk; 1175 lbs. 7 oz. butter. Register of Merit test, five years, 64,095 lbs. 4 oz. milk; 4414 lbs. 14 oz. butter. Isn't she a beauty? She's a typical granddaughter of Sophie's forerunner, the bull who has produced the greatest family of economical milkers in the world. The Jersey is the money cow. She produces the richest milk on the plainest feed and she's hardy, gentle and lovable.

Stock and Dairy Queries Answered

Nasal Gleet.—T. R. A., Ohio, writes: "My mare has had a discharge from her left nostril for about two years. The discharge is not constant. Sometimes for days at a time there will be none and then when she is drinking, or at other times, especially if she coughs, the discharge will be plentiful. It has a very foul odor. She eats and looks fairly well."

This is nasal gleet and is the result of either a decaying molar tooth or fracture of the bone of the face. An operation by a veterinarian is necessary. If there be a decaying tooth he will extract it, and if there be a splintered or diseased bone he will trephine into the sinus and remove or scrape it.

Cribber.—D. A. J., Virginia, writes: "When my driver is standing in the stable he catches the edge of the manger with his teeth and makes a very disagreeable, grunting noise. He will catch the top of a tie post and act the same way."

This is a vice that is almost impossible to check. The daubing of the manger with something that has a well marked disagreeable taste, such as a solution of aloes, will sometimes check it. A strap buckled around the throat so tight that the tissues cannot expand, but at the same time will not interfere with swallowing, will render him unable to crib, but in most cases he will practice the vice as soon as the strap is removed.

Leucorrhoea.—W. V. L., New York, writes: "My mare was bred three years ago, but aborted during the winter. For over a year she had an irregular discharge of a thick, white, colored matter. Sometimes there is no discharge for several days and then there will be an abundant discharge, especially when lying down. At other times the discharge is more continuous but not in such large quantities. She sometimes shows estrum and I have bred her without results."

This is leucorrhoea, commonly called whites. It is very hard to treat effectively. She will not be likely to conceive

until cured. The womb should be flushed out once daily with an antiseptic, such as about a gallon of a warm 1 per cent. solution of one of the coal tar antiseptics or an ounce of boric acid to a gallon of warm water. In addition, give her 40 drops carbolic acid in a pint of cold water sprinkled on her food three times daily until the discharge ceases. Then she should breed.

Chronic Enlargement.—H. & H. B., Pennsylvania, writes: "Colt was kicked on the hind shin by an unshod horse a year ago. The leg swelled and was very sore and the colt went lame for a few weeks. After a time the inflammation subsided, the lameness ceased and the swelling became reduced, except at and for some distance around the seat of injury. Now there is quite a large, hard lump there."

Chronic enlargements of this nature are very hard to reduce. Get a liniment made of 4 drams each of iodine and iodide of potassium and 4 ounces each of alcohol and glycerine and rub a little well in once daily. Have patience and continue treatment, as quick results will not be noticed.

Lump Jaw.—A. M. C., New Jersey writes: "A 2-year-old steer has a hard lump near the angle of his jaw. It appears to be on the bone. It has broken and discharged a little and then healed. This has occurred twice."

This is lump jaw. Give him iodide of potassium three times daily. Commence with 1-dram doses and increase the dose by ½ dram daily until he refuses food and water, fluid runs from eyes and mouth and the skin becomes scurfy. When any of these symptoms become well marked cease giving the drug. If necessary, repeat treatment in three months.



"Velvet" For Dairymen

West Chester, Pa.

February 3rd, 1916.

Mr. Dairyman:
We have a wonderful new invention and I want to tell you about it myself. It is a source of new profit for dairymen without added expense which I call "velvet," for it is all profit.

Thirty-five years, longest in America, the Sharples plant has been devoted exclusively to the Cream Separator.

Its inventors produced the first cream over-flow bowl with its superior quality of smooth even cream, the first directly driven steam Separator, saving power, fuel and wear, the first and only tubular bowl with its doubled skimming force and efficiency and extreme simplicity, the bottom feed, the hanging tubular bowl, all making for convenience, durability, economy of maintenance and operation.

Now we have made another great invention, greatest of all as a profit producer, though so simple that it seems we should have had it long ago.

Thousands of carefully made observations by competent investigators, government officials and scientific men have proven beyond question that 95% of all the hand driven cream separators in America are turned below regulation speed, below the speed marked on the handle, a great part of the time and every hand separator is under-speeded some of the time.

No matter which separator, whose make, or what it is capable of doing when turned at full speed, it will lose cream and a lot of it, when the speed is allowed to drop even for a moment, and with the cream goes the profit.

THE NEW SHARPLES SUCTION FEED

Separator will stop this loss, aggregating millions of dollars annually to America's dairymen—stop it at once and forever.

No matter if you turn this Separator at widely varying speeds, fast or slow, it skims equally clean—no cream will be lost. The bowl drinks its milk supply as it needs it, always in exact proportion to the separating force within the bowl. At slower speeds it drinks less, at faster speeds more, but always just the right amount for clean skimming.

A thousand of these machines are in regular daily use; we demonstrated them to a finish before announcing them; it is the Sharples way—absolute perfection before sale.

The Sharples Suction Feed Separator has several very important advantages in addition to its certainty of clean skimming at any speed. The varying of speed does not change the thickness of cream; fast turning increases the capacity much above normal, just as you whip up a horse, when in a hurry. The supply can be as high as the machine and the machine is simpler and better than ever.

We sell our Separators now, as always, subject to free trial by the buyer; but a stronger guarantee than any trial is the unbroken record of the growth of this business from the small beginning of 35 years ago to its immense proportions of to-day. It could not grow so except by the unbroken rule of complete satisfaction to customers.

Lack of space prevents explaining more fully; but send today for new book, "Velvet for Dairymen," that tells all about this money-saving invention.

Sincerely yours,

C. M. Sharples
President.

The Sharples Separator Co.

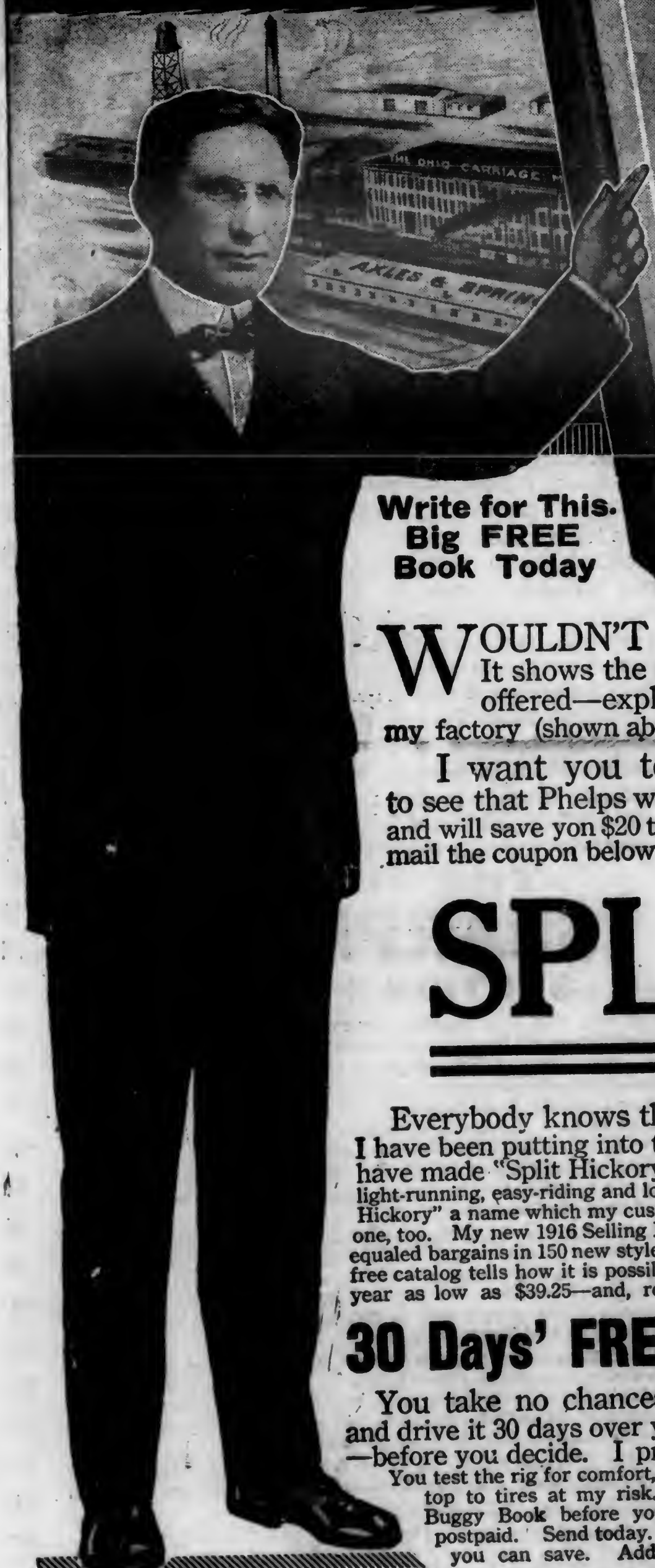
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"Our Farming" T. B. Terry's story of how he converted a run-down farm into a money maker, valuable in practical suggestions; absorbingly interesting. 300 pages, illustrated, paper covers. FREE with a 3-year subscription to The Practical Farmer at \$1.00; mention this ad. Walker Publishing Co., P. O. Box 1551, Philadelphia, Pa.

My Great 1916 Split Hickory Buggy Book

Is Now READY

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Write for This.
Big FREE
Book Today

WOULDN'T you like to have a copy of my big 1916 Buggy Book? It shows the most complete assortment of styles and the most surprising values ever offered—explains how my new plan of splitting profits with my customers has made my factory (shown above) the biggest in America selling high grade vehicles direct to the user.

I want you to have a copy of this big Free Book right away. I want you to see that Phelps will not only sell you a better buggy—a genuine Split Hickory—but that I can and will save you \$20 to \$40 by my direct-from-factory special price-splitting offers, for 1916. Just fill out and mail the coupon below or drop me a postal and I'll send you a copy of this big book by return mail—postpaid.

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Everybody knows that THAT name on a buggy is a mark of the highest quality. For 16 years I have been putting into these vehicles the finest materials and the most expert workmanship I could find. I have made "Split Hickory" vehicles famous the world over for beauty of style, excellence of workmanship, light-running, easy-riding and long service. Nearly a quarter of a million of them are now rolling over the roads. I have made "Split Hickory" a name which my customers are proud to show. You will be proud to own one, too. My new 1916 Selling Plan cuts prices more than ever. Gives unequalled bargains in 150 new styles. Saves you \$20 to \$40 on your new rig. My free catalog tells how it is possible to sell you a genuine Split Hickory this year as low as \$39.25—and, remember, that on every Split Hickory I give

30 Days' FREE Road Test — 2 Years' Guarantee

You take no chances. I let you pick out the rig you want and drive it 30 days over your own roads—under your own conditions—before you decide. I prove the quality—I prove the value.

You test the rig for comfort, light-running, style and workmanship from top to tires at my risk. Be sure to write for my big FREE 1916 Buggy Book before you buy. This coupon will bring it free—postpaid. Send today. See for yourself the money you can save. Address H. C. PHELPS, President,

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Also ☐ Farm Wagon Catalog and
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the energy, stamina and continued health, so necessary to any
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World's Champions, it will help your cows to do better
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Good For Horses, Hogs and Calves

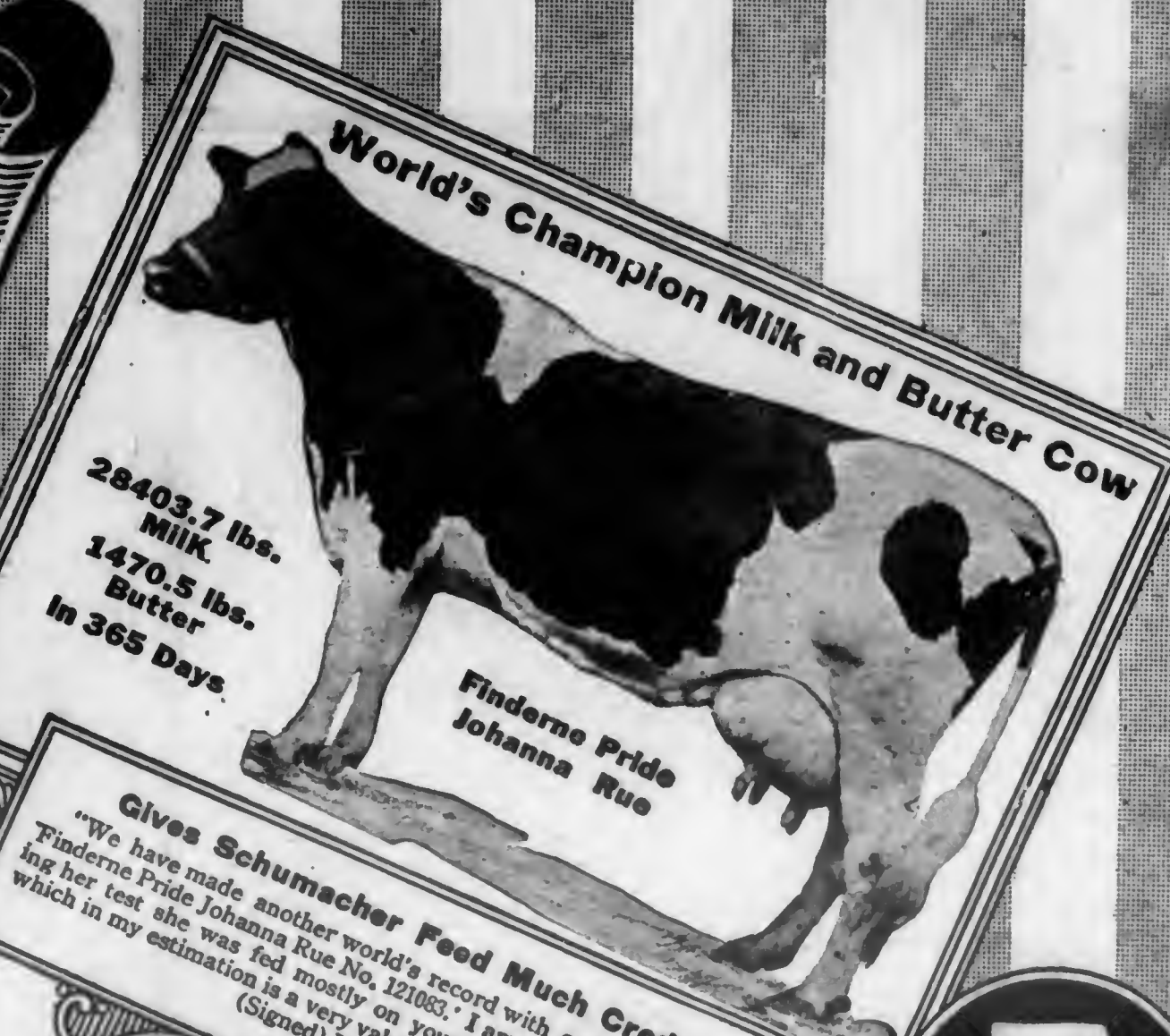
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17557 lbs.
12 oz. Milk
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7 oz. Butter
In 365 days

Schumacher Feed
feeding SCHUMACHER
her last record January 20,
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SCHUMACHER FEED a splendid
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World's Champion Milk and Butter Cow
28403.7 lbs.
Milk
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Butter
In 365 Days
Finderns Pride
Johanna Rue

Gives Schumacher Feed Much Credit
"We have made another world's record with our Holstein cow
Finderns Pride Johanna Rue No. 121683. I am glad to say that dur-
ing her test she was fed mostly on your SCHUMACHER FEED,
which in my estimation is a very valuable feed for dairy purposes."
(Signed) Bernhard Meyer, Finderns, N.J.

World's Champion
Four-Year-Old Jersey for
Six Months

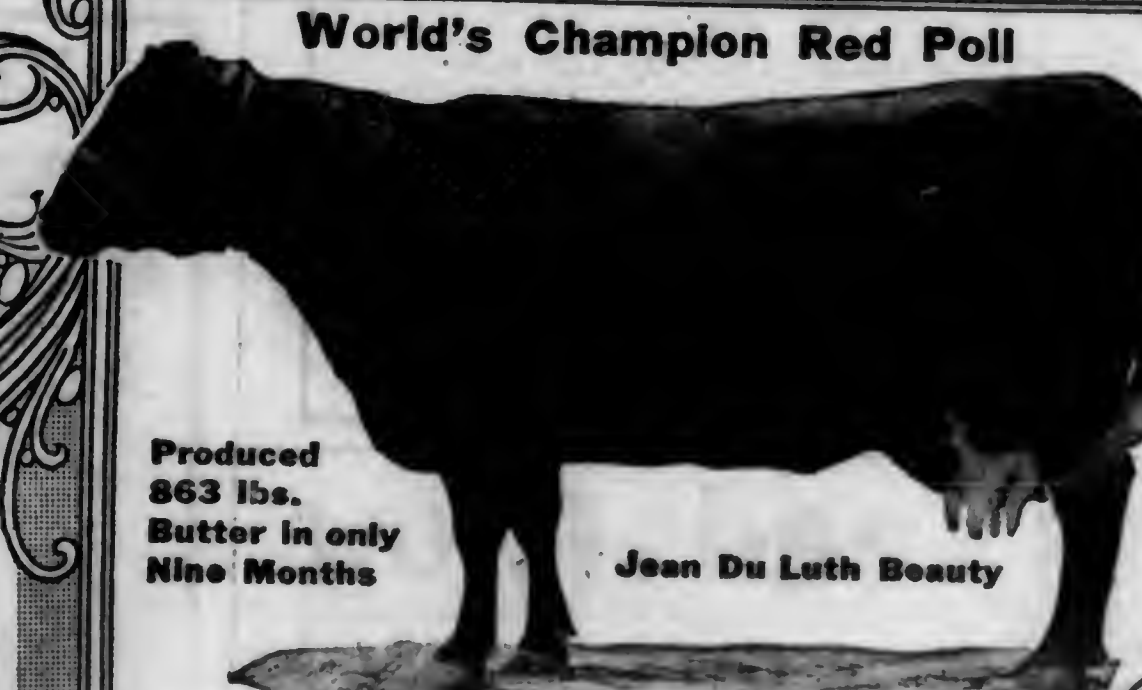


14315.6 lbs.
Milk
785.9 lbs.
Butter Fat
In 365 Days

Flying Fox's Maid

Schumacher Feed Helped Make This World's Record
"As a good example of the result of feeding SCHUMACHER FEED, I am pleased
to report the record of my Jersey four-year-old Jersey, Flying Fox's Maid, No. 121683, who
made milk containing 17.5 pounds butter fat, ex-
ceeding the best previous record for nearly 100 pounds. Her milk brought \$67.10 ex-
clusive, and the cost of her feed was only \$11.10. During a test period of 365 days, she
year. She was fed SCHUMACHER FEED for the last 10 months of her test, and from
the beginning of her test to the end of her test, she was fed SCHUMACHER FEED. This
better feed than she started. The result was so satisfactory that we are now feeding
the entire herd in the same manner, and consider your SCHUMACHER FEED one of the
most essential elements of our ration. Sincerely yours,
J. B. Manning, Prop., United Farm, Portland, Me.

World's Champion Red Poll



Produced
863 lbs.
Butter in only
Nine Months

Jean Du Luth Beauty

Schumacher Feed a Liberal Part of Her Ration
"We are so well pleased with the work done by Jean
Du Luth Beauty and Jean Du Luth Pear that we are mak-
ing SCHUMACHER FEED a part of the ration in both
our Red Poll and Guernsey herds. We have over 35 cows
on official test."
Jean Du Luth Farm, Duluth, Minn.

(46)

NEVER MIND THE "WAR BRIDES" STICK TO THE FARM



Knickerbocker Lime Products for the Land are guaranteed to meet all State Laws and United States Government Requirements. PRESIDENT WILSON says, "there should not be a plow or spade idle in this Country and the methods of our Farmers must feed upon scientific information in the State Department of Agriculture and tap-room of all the United States Department of Agriculture." The Farm is worthy of the best. Buy good Lime. It costs less than poor Lime. DO NOT BUY IMPURITIES BY THE TON. The value of Lime to correct acidity in the soil has been proven.

Information and prices upon request.

Profit from Every Hill



International
and CB & Q
Planters

NEXT in importance to good, tested seed, every authority on corn raising places good planting. Evenly spaced hills; the same number of kernels dropped in each hill; even depth of planting; a reliable foot drop for finishing the field—these are the features demanded of a planter by every careful corn raiser.

This is the standard to which the builders of International and CB & Q corn planters work, and excellent planting is the result. Note, first, the substantial frame and wheels—the foundation of the machine. Then see how simple are the arrangements that enable you to drop 2, 3, or 4 kernels in every hill, or to drill in your corn with accurate spacing between the kernels. The use of an International or CB & Q corn planter gives you assurance that every hill of corn on your farm will produce its full share of corn profit.

Try one this year. Ask the local dealers, who handle these machines, to show you their good points in detail, or write to us for complete information about reliable International and CB & Q corn planters.

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Champion Deering McCormick Milwaukee Osborne Plano

Use NATCO Drain Tile—Last Forever

Farm drainage needs durable tile. Our drain tile are made of best Ohio clay, thoroughly hard burned. Don't have to dig 'em up to be replaced every few years. Write for prices. Sold in carload lots. Also manufacturers of the famous NATCO IMPERISHABLE SILO, Natco Building Tile and Natco Sewer Pipe.

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Conducted by A. E. GRANTHAM

Clearing Land of Stumps With Dynamite

LAIRD R. DAVIS.

Some time ago we decided to try some dynamite for removing stumps from a piece of land. The land had been cleared about five years, so the stumps were slightly decayed, but were solid. The roots were very hard and it would have been a difficult job to remove them by hand.

We got some 40 per cent. strength dynamite and started to work. As the dynamite costs 10 cents a stick, fuse 1 cent per foot, and caps 1 cent each, we thought we would try and save as much as we could, so we used one-half stick to the stump where they were not too large and solid, and a whole stick for the more difficult ones.

Now, I didn't know anything about dynamiting, and being a boy of 17, I thought I would try it any way. I did not have the best of success at first, as I did not know where to put the dynamite; so I began to experiment. Tried putting the charge in deep, as the hard ground would give better results. This proved to be a fact with me, as I have had much better success when I put the charge down deep, rather than shallow. I consider this to be a very important thing, as it will save about 25 to 50 per cent. of the amount of explosives generally used for this work.

We use an auger about 2 feet long to bore the holes and bore down close to the tap root, and clean hole out well. Then we take the cap and insert the fuse and crimp the cap on the fuse so it will not pull out; take one-half stick of dynamite and unfold the paper at the ends; make a small hole in the dynamite and set the cap down in it; tie the paper around fuse; place the dynamite in the hole and tamp the dirt carefully around this, lightly at first, as you might discharge the cap. After packing tightly around fuse ignite same and get out of the way. Allow about half a minute to each foot of fuse, but if it fails to explode in this time, do not go back to investigate for several hours.

West Virginia.

[We would be glad to hear from others who have had experience along this line.—The Editor.]

Queries Answered

Starting Alfalfa.—T. W. B., Vermont, writes: "What are the probabilities of success in starting alfalfa by sowing it in the spring in connection with oats or wheat where said ground was to be seeded down to grass? This is an important question for me to solve, as I want to try a piece this spring under those conditions."

I understand that you mean to sow the alfalfa along with the oats or wheat in the spring, as is usually done with grass. If you do not sow the wheat or oats too thickly you should have a fair chance of getting the alfalfa started. If the grain is seeded too heavily the alfalfa plants will be crowded and will suffer from lack of air and moisture. The chief drawback to this method of seeding is that the oats draw very heavily upon the moisture supplies in the soil, so that at harvest time the alfalfa emerges weak and unfitted to combat the dry, hot weather which follows. A thin seeding of grain, about two-thirds the normal rate, during a season of average rainfall, will give the alfalfa a chance to become established. However, if you have a fair amount of rainfall in the month of August it would be better to plow and fit the land after the oats are removed and seed in the latter part

Less LIME—greater CROPS

Caledonia MARLIME

Because MARLIME is soluble it will yield quicker and bigger results than even ordinary carbonate of lime. And you won't need as much. Write today for lowest prices, free test papers, etc.

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835 Madison Park Bldg., Buffalo, N. Y.

Your Land Won't Grow Clover

Because years of cropping have robbed your soil of its Phosphorus. Restore the Phosphorus and you can bring back the fertility. The use of **FEDERAL GROUND ROCK PHOSPHATE** will enable you to grow clover. Clover supplies nitrogen and makes other plant food elements available. The cost of Phosphorus is \$1.00 per acre per year—the profit an increased clover yield of 1/2 ton. Write for proof, price and particulars.

FEDERAL CHEMICAL CO.
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PULVERIZED LIMESTONE

A booklet explaining why Limestone is the best and most economical form of lime to use—why it should be used—to increase earnings on the farm.

SENT FREE UPON REQUEST

CELEBRATED WHITE MARSH LIMESTONE
Highest Quality, Lowest Price
Recommended by Agricultural Experiment Stations. Full information as to most economical way to purchase.

E. J. LAVIRO & CO.
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DON'T WASTE YOUR FERTILIZER

Don't waste your lime or fertilizer. Apply it evenly and economically with the most complete, best and cheapest spreader sold today.

THE GUARANTEE SPREADER
Fully equipped with patented shifting clutch, operated from seat, and spreading attachment that spreads evenly, or sows in rows. Simply constructed and will last a lifetime.

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SPECIAL PRICES.

Cheap Potash

Wherever and Whenever possible release it and make it available by using pure lime.

WARNER'S "LIMOID"

Is Pure Cedar Hollow Lime, perfectly hydrated, in cloth or paper bags. Always ready for any purpose. Can be stored in any dry place. Can be used also for whitewash, orchard spraying, brick and stone masonry. Write for our issue of Farm Economics.

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CABBAGE PLANTS

Forty million Genuine Frost Proof Plants. Varieties: Early Jersey Wakefield, Charleston Wakefield, Succession, Flat Dutch, and Drumhead. Price, 60¢ for \$1.00; 100¢ for \$2.00, postpaid and insured. By express, 100¢ at \$1.25; 500¢ at \$6.00; 10,000 at \$50.00 to \$20,000 at \$250 per 1000. Prompt delivery and good strong plants guaranteed. Write for catalogue.

FREDMONT PLANT CO.
Albany, Ga., and Greenville, S. C.

Want to buy well located farm. Owners and price. B. Folsom, Box 754, Chicago, Ill.

John Deere Implements



John Deere Syracuse Plows The Plows with Perfect Fitting Parts

SYRACUSE shares fit perfectly—extra shares go on easily. A smooth joint is formed between share and moldboard and share draws up snugly to its place. Remember that Syracuse cast shares are chilled throughout their entire cutting edge and point. The under side of point and cutting edge is also chilled—of vital importance in preserving the proper pitch and extending the period of usefulness.

Two bolts in the share instead of one and there is a rim on back of share that strengthens share and standard. Lug holds moldboard and share closely together.

In addition John Deere Syracuse Plows are built with long handles, which produce steady running qualities and make the plow handle easily. Write us for free literature on the 1361 series—chilled plows, left hand, that work well in sandy and gravelly soils as well as in loam, turn sod perfectly and have sufficient curvature to pulverize in stubble land.

Also the 1878 series, a complete line of right and left hand cast beam chilled plows; the 501 series, sloping landside chilled plows and the 16 series hillside plows, light weight and clean turning.



John Deere Corn Planter The Accurate "Natural Drop" Planter

ACCURATE—because it has the "Natural-Selection" drop—an improvement over all other methods.

Kernels do not have to be tipped on edge to enter the cells. Surface of hopper bottom and openings to seed cells are oblique, or sloping. The kernels naturally move toward and fill the cells.

A full-variable drop planter. Plants two, three or four kernels as desired—all you do to change number in the hill is to move foot lever.

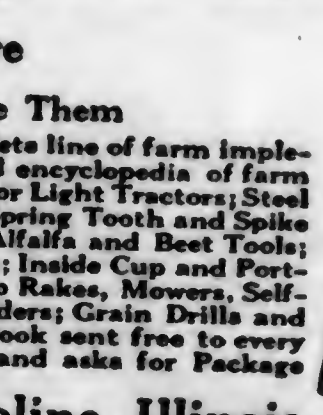
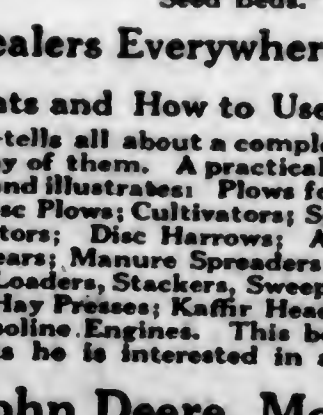
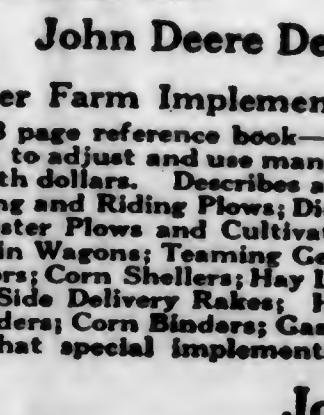
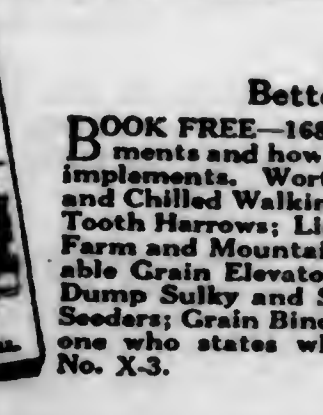
Drilling distances varied, and change from hilling to drilling or back to hilling made just as easily. All corn plates for this planter have 16 cells. Therefore, the same drilling distances are obtained with one plate as can be secured on other planters that require 8, 12 and 16 cell plates.

The gears are always in mesh and can be shifted at any time (even when in operation) to change drop or drilling distances.

Investigate the John Deere tip-over hoppers, quick detachable furrow openers, underhung reel and disc marker without rope.

Write for free booklet, "More and Better Corn."

John Deere Dealers Everywhere



CLOVER ALFALFA \$9.60 PER BU.

Best quality seed early to permit testing for purity and growth. We allow return of unsatisfactory seed—refund money—any time. The early buyer, however, prices. If you need seed early of any kind, write for free catalog and samples. Do it today.

A. H. ROFFMAN, Inc., Landville, Lanc. Co., Pa.

POTATOES WANTED

In car loads or small lots. Active demand at good prices for market prices. Also Apples, Onions, Hay, Potatoes, etc. Write us for market prices and terms. **GEORGE C. BROS.,** 321-23 N. Front St., Philadelphia, Pa. Estd. 1844.

SEED

Oats, Barley, Wheat, Potatoes. All new varieties. Largest yielders known. Best quality. Prices low. New Catalog free. **G. A. READ, Seed's Exp. Farm, Charlotte, Vt.**

FOR SALE—Cow Peas—All Varieties

One fifty per bushel. **JEFFREYS & SONS, GOLDSBORO, N. C.**

John Deere Spreader

The Spreader with the Beater on the Axle

ONLY hip high to the top. Wheels out of way when loading. Mounting the beater on the axle is patented. Write for Spreader booklet.

Three exclusive John Deere Spreader features:

- (1) Beater on the axle—nothing else like it.
- (2) Revolving Rake—load moving back to beater revolves the rake. Draft actually less. Even spread certain—no bunching.
- (3) Ball Bearing Eccentric Apron Drive—requires no attention. Performs wonders in the working of the spreader.



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Steel Frame—Patent Auto Foot Frame-Shift

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The Women's Exchange.

This is the farm women's own department—for them and by them. It is devoted to the discussion of topics of everyday interest to the women of the farm family. The Practical Farmer, wheat, and expects you not only to write your experiences on the topics under discussion, but also to propose topics for future discussions. The best letter published herein each issue will be awarded a prize of one dollar, and for each other letter published we will pay fifty cents. Address: **WOMEN'S DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.**

MARCH 1.—Tell of the Plans You Have for Making the Home Garden This Year. Describe in Detail the Methods Employed to Secure a Succession of Fresh Vegetables from Spring Until Frost.
MARCH 15.—Tell in Detail How You Make Butter.
APRIL 1.—Give Receipt for Your Favorite Way of Preparing Rhabarb. Tell How You Serve Asparagus and Give Receipt for Any Dressing You May Use.

All contributions to the Exchange must reach us at least 15 days before the date of issue in which the topic is to be discussed.

Tell in Detail How You Handle Your Flock When Once They Start to Lay. Do You Keep Pullets Only, or Hens as Well? When do You Dispose of the Male Birds?

Mrs. W. R., Olive Hill, Ky.—We are practical farmers, making our living from our acres and our chickens. Our birds are selected for utility. They must make good in the way of eggs and broilers. We are careful in selecting the fowls that are to be kept for winter layers. We depend upon 18-month-old hens and very early pullets for winter egg production, and these, with proper care and feeding, produce a maximum yield when eggs are high in price. We make an early selection of our laying stock, selling off all the undesirable birds. Thus we get uniform fowls of the right age, and it is necessary that they be properly fed so they will reach the laying stage at the right season. We give our hens and pullets free range and they gather bugs, worms and green food and get plenty of outdoor exercise. For their grain ration we feed whole wheat, cracked corn, oats and sorghum seed. We sometimes feed a mixture composed of beef scraps, bone meal, a little charcoal and wheat middlings. Lime is kept where they have free access to it. When snow covers the ground we place a trough of grit where they can help themselves. We place dust boxes in their scratching sheds. The dust is composed of wood ashes with a quantity of sulphur and tobacco dust mixed in. This dust bath keeps our birds free from lice and mites. In cold weather we put red pepper in their drinking water and we have found that this prevents roup. We mix salts in their food—a tablespoonful to every 20 birds put in their mash three times a week. This will prevent the cholera. We sell off the young male birds when old enough for broilers. As soon as the breeding season is over we sell all the cocks to people in the nearby country, and in February we purchase yearling cocks from some reliable poultryman and we find that this pays us. We keep but one breed, the Rhode Island Reds. Our broilers and fresh eggs go to a select trade in nearby cities. We manage to make our chicken farming pay well.

Mrs. I. E. B., Franklinville, N. Y.—I never let my laying hens out in the snow, but keep them shut in from autumn until spring. I keep the hen house warm, with plenty of fresh air in it, but no drafts, and keep it and the hens free from lice with a good louse exterminator. I feed in the morning a little grain in the litter, then about four or five quarts of dry mash to 50 hens; at noon I give them whatever green feed I have—I like cabbage best; a half bushel about the right quantity for 50 hens. In the afternoon I feed them mixed grains in the litter. The scratching around to get their feed at night warms them up well before they go to roost. I like shavings better than straw for litter, as there is no danger of gathering dampness and so last longer. I always warm the drinking water for the laying hens, and keep oyster shell and grit where they can get them. I cull my flock two or three times a year, picking out the unprofitable birds. I keep yearling and two-year-old hens as well as pullets. I find my two-year-old hens lay nearly

Mrs. H. R., New Paris, Pa.—I feed my chickens as a scratch feed, wheat and oats, and occasionally some buckwheat. In the evening I feed corn. I keep plenty of clean water before them all the time. I always make the water warm before giving it to them. I keep their drinking vessels clean and occasionally add a lump of lime to their water, which I believe tends to keep them healthy. I keep oyster shell and pearl grit before them at all times. I also give them coal ashes and it is surprising how they pick the cinders all out. I find an essential thing to keep hens laying is to keep their house clean, also keep plenty of litter in their house, which will require them to scratch for their feed. I give my chickens all the scraps from the table, meat and plenty of green stuff, such as cabbage, beets or sprouted oats. I always mix their mash with sour milk or butter milk, which takes the place of a part of the meat scraps. I keep year-old hens as well as pullets, and find it pays. I sell the male birds as soon as they are of a marketable size, thereby getting them off of the feed, and young chickens early in the summer bring a better price.

Mrs. W. D. D., Burkeville, Va.—I push my hens through their molting season, and keep my pullets growing steadily so they are ready to begin in the early fall, and am never without eggs to sell from a flock of fifty hens. So my investment is for all the year rather than for any special season. An abundance of the right sort of food, good shelter, and freedom from insect pests will generally cover about all that is necessary in the treatment of a laying flock. But first be sure that you have good hens. Mine have free range with plenty of alfalfa reach; and in addition I have a winter crop of turnips and mustard sown in the garden, and the hens are fed all they will eat of these. They have one heavy feed of corn a day, and all the skim milk they will drink, with a wet mash of boiled potatoes, turnips and scraps thickened with bran or middlings, or of middlings with a little beef meal. They are kept free from vermin, and have

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plenty of clean nest boxes, which are painted inside and out with crude petroleum. Last year, though I used a number of the hens for hatching and rearing broods, they averaged a fraction over 150 eggs each under the above conditions.

I sell eggs for hatching and stock for breeding purposes, and am interested in vitality and quality, rather than in a record-breaking yield. Hence I keep many yearling and 2-year-old hens, if they are the correct type and have proved themselves good producers. And I never set or sell my pullets' eggs until they have laid at least one or two sittings, as I believe constant breeding from immature stock is a bad practice. My young cockerels are sold for breeders, except such as are lacking in type, or are off in color; these are sold on the local market about Thanksgiving. My breeding stock is sold principally during the fall and winter months. I begin selling the oldest ones in September, and sometimes have orders as late as March. After January I separate all the surplus cockerels from the flock, shutting them up by themselves and allowing only those that I keep for myself to run with the hens.

A. B. L., White River Junct., Vt.—Some of our hens are laying all the time, so we feed well, summer and winter. We keep oyster shell before them all the time, and give them a bran mash every

day, which we moisten with milk; this we scald in the winter time, so they can have it warm, which they like very much. Our flock of 75 hens have the milk from one cow. Sometimes we make it into a curd for them, which takes the place of meat with them and they like it as well. We also give them milk to drink for a change.

We feed about half oats and half corn, and usually give them some wheat once a day, even when it is as high as it is now, \$2.40 per 100 lbs. We think it pays well in returns, and we have the credit of knowing how to feed for eggs and are the envy of our neighbors when eggs are 40 to 50 cents per dozen.

We have a regular market for eggs, supplying drug stores as well as a few private families.

We usually keep about half pullets, using markers on their legs, so as to be sure and keep the oldest birds killed off and marketed. We dispose of the male birds early in the fall—in August and September—when we get a good price for them.

The article regarding home soap making which was inspired by the results of our home soap making contest (the prize awards in which were awarded in our issue of Feb. 1st), was unfortunately crowded out of this issue. It will appear in an early issue.

Our Fashions and Patterns

In order that our readers may be able to keep in touch with the most practical styles for ladies, misses, and children, we have made arrangements to supply our readers with perfect-fitting, seam allowing patterns at the price of 10 cents each, postage prepaid. Full directions for making, as well as the quantity of material required, accompany each pattern. When ordering all you have to do is to write your name and address in full, let us know the number and size of each pattern you want, and send 10 cents for each number. Address all orders to FASHION DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.



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7587.—Ladies' shirtwaist. Cut in sizes 34 to 42 inches bust measure. Long or short sleeves may be used.

7534.—Ladies' dress. Cut in sizes 34 to 42 inches bust measure. The closing is at the front and the skirt has three gores.

7553.—Ladies' skirt. Cut in sizes 22 to 32 inches waist measure. The skirt may be made with or without applied yokes and with high or regulation waist line.

7418.—Misses' dress. Cut in sizes 14 to 20 years. Plaid and plain materials are used to make this dress.

7542.—Ladies' skirt. Cut in sizes 22 to 30 inches waist measure. This skirt is cut in two gores and is perfectly plain.

7565.—Ladies' apron. Cut in one size. Any of the pretty flowered materials can be used for this apron.



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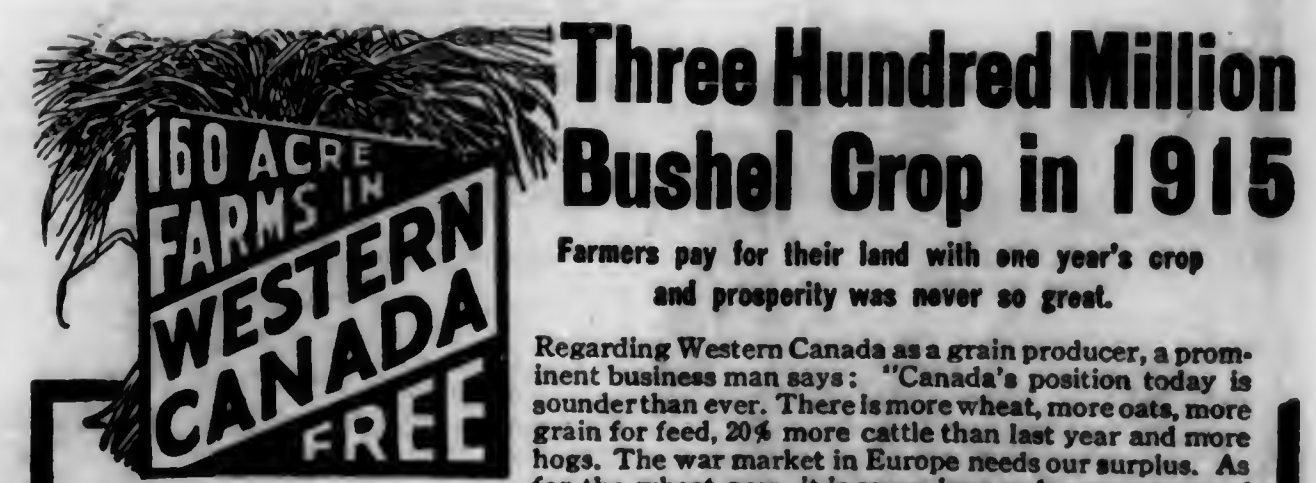
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OUR EXPERIENCE POOL

"Experience is the best teacher." This Experience Pool is a twice-a-month Farmers' Institute for the exchange of practical ideas by practical farmers. We want them to give their experience, as well as suggest topics for future discussion. We publish this department so that all may have the benefit of the tangible, practical experience of others on every subject pertaining to the farm. Let all contribute. A cash prize of \$2.00 will be paid for the best contribution, \$1.00 for the second and 50 cents for each other contribution published. The only condition is that you write about the topic you write about. Articles on all topics must be in our hands at least 15 days before date of publication. Do not forget to suggest ahead topics for discussion. Address all communications to "Experience Pool," The Practical Farmer, Philadelphia, Pa.

Topic No. 1190, MARCH 1.—With What Truck Have You Been Most Successful? Give in Detail Method of Growing and Marketing.

Topic No. 1191, MARCH 15.—What Live Stock Have You Found to be the Most Profitable? Tell Briefly Your Method of Feeding and Caring for it from Birth to Maturity.

Topic No. 1192, APRIL 1.—Have You Found It Good Practice to Roll Your Meadows? If so, How Heavy a Roller do You Use? Give Breeding Timothy with Fertilizer in the Spring.

Topic No. 1189.—Give Your Experience in Hatching Eggs with Incubators. Tell Why You Prefer Them to Hens.

C. D. K., Mt. Crawford, Va.—The past season, 1915, I purchased a second-hand incubator for \$12, 260-egg capacity. The machine was brought home, thoroughly looked over and disinfected, put in the cellar and adjusted in perfect running order. It has an electric alarm bell which was attached to the ceiling of the cellar. The lamp was lighted and the alarm was set so as to vary in temperature from 100 to 104 degrees. When the eggs were placed in the trays. This was the second of March. The first night about 2 o'clock I was aroused by the alarm bell, which was easily heard on the third floor. I hurried to the cellar and found the thermometer standing at 104 degrees. The lamp was slightly turned down to lower the temperature. On the third day the eggs were turned for the first time. They turned them both morning and evening and each time the eggs were shuffled about so as to change their position on the trays. The temperature from then on was kept as nearly 103 degrees as possible. On the seventh day I tested out 21 infertile eggs, and on the fourteenth day I tested out 25 eggs. About the seventeenth day I began to slightly sprinkle the eggs with warm water twice a day, until the nineteenth day. The machine was then not opened until the twenty-first day, when 196 fine, plump White Leghorns were removed to the brooder.

The machine was cleaned and disinfected and on March 24th the trays were filled again; 32 eggs were tested out on the seventh day and 13 on the fourteenth day. At the end of twenty-one days 206 healthy chicks were removed from the machine. The trays were again cleaned and filled on April 15th; 44 eggs were tested out in the two testings and 192 chicks were hatched. In the three successive hatches I made an average of hatching 92 per cent. of the fertile eggs.

To be sure, the old way of hatching with hens is all right, except that it is a little slow. I raise the White Leghorns and they are non-sitters. We find it more profitable to have the hen laying than sitting.

J. G. E., Seaford, Del.—My experience with an incubator is limited, yet it is with a great deal of pleasure I recommend them to be more economical, convenient and less trouble than the old-fashioned way nature provides, as followed by the average farmer.

In the spring of 1914 we had much trouble with our hens, getting them to sit, and lost many eggs as a result. Becoming disgusted, I decided, in 1915, to try artificial incubation and by having a small incubator as much trouble as a large one. I purchased a 300-egg machine, and to be sure I would operate it correctly I carefully studied the directions and ran it at least one week before putting in the eggs. It all worked very well and I found it but little trouble. I did not feel like risking my eggs in high temperatures, so ran it at 102 degrees for ten days, and the remaining eleven days at 103 degrees. Chicks began to hatch on the twentieth day and were soon out. To my astonishment the 382 eggs left after testing out, produced 372 perfect chicks, which I placed under a coal stove brooder and raised to maturity 360 choice chickens.

In order to determine the real value of this incubator I set two hens at the same time, which hatched 21 chicks from 30 eggs, each hen breaking 3 eggs while sitting. These chicks I placed in a coop with one of the hens, as it was cold and windy; they did not grow well. Occasionally the old hen would mash one at least they were found dead in the coop. At the end of three weeks I had 14 chicks with the hen and they were about half the size of the incubator chicks. It was with difficulty I convinced my neighbors the chicks were the same age.

When I look back over the past year and realize I raised 92 chickens from 100 eggs set in the incubator, and at the rate of 47 out of 100 eggs set under hens (besides the two hens were as much trouble as the incubator) I am convinced incubation is more economical and more conveniently handled, and can get out earlier chicks.

C. H. C., E. Barrington, N. H.—There are one or two reasons why the incubator is a necessity on the poultry farm, principal of which is the fact that the machine makes it possible to do business in spite of the whims of biddy. It is quite impossible to get early chicks in any considerable number by hen hatching. I have kept R. I. Reds and a few of them get brooder during the winter and early spring, but the most of them wait until April, May and June. Were we dependent upon hens for hatching we would not get many chicks out early enough to make winter layers, neither would we reach the early broiler market.

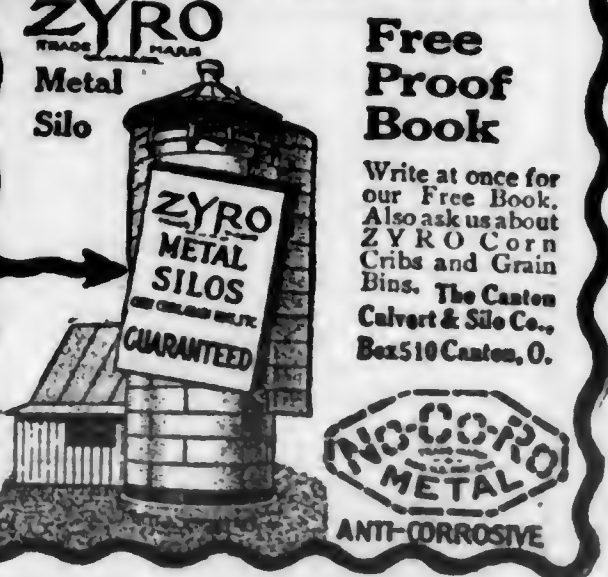
convinced the quite reason enough to convince the most skeptical that the incubator is far ahead of biddy.

Chicks hatched in the incubator are freer from vermin than those which are hatched under hens. Properly handled, they are also fully as free from disease. Less time is required to hatch a hundred chicks in the machine than with hens. Before challenging this statement stop and consider that the incubator requires but a few minutes once a day to keep regulated, while several hens must be taken off the nest, fed, watched and put back every morning. Winter settings require particular care to see that the hens do not stay off the nests too long, while the machines require little more attention than in the summer.

M. A. H., Mattawana, Pa.—In hatching with incubators there are several advantages over hatching eggs with hens. In the first place, you can set the incubators whenever you have the eggs ready, while you would have to wait for a hen, and possibly ruin the eggs by holding them too long. When you have started the machine you can rest assured the eggs will not be broken and soiled when you come to look at them. The hen is also apt to leave the nest and spoil all the eggs. In my work last year I operated eight incubators with a capacity of 850 eggs, while in a pen I had 28 sitting hens with 11 to 15 eggs under a hen. The cost of the feed for the hens I considered about balanced the cost of the oil for the machines, while the time I spend feeding and watering the hens took me about half as long as to tend to my machines. But here a great advantage was with the machines, as the eggs in them were always clean, while I often had to wash the eggs under the hens; I also had to change the litter in the nests. Another thing was, when the chicks were coming out some hens would move around and sometimes tramp three or four chicks to death, while the machine would be full of hustling chicks. The hens hatched a larger percentage of chicks from the same amount of fertile eggs, yet the bother with the hens did not pay for the difference in the number of chicks. And last, what I think is the best advantage of all, of the machine over the hen, is, that when you take a hatch out of a machine you can feel safe that no lice will bother them as long as you keep them away from the other chickens or out of coops which are not free from lice.

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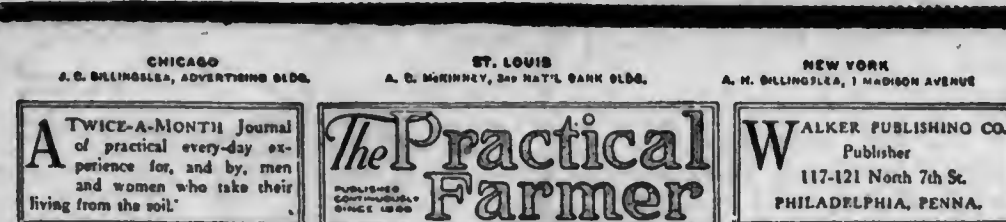
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Mr. H. S. Lehmann,
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September 25, 1915.

Dear Sir:

While we take pains to be sure that all the manufacturers, dealers, and merchants who use the advertising columns of The Practical Farmer furnish goods exactly as represented, and give full value for our readers' money, we are very glad that the Manufacturers Outlet Company is putting itself on record with its \$10,000 guarantee in such a way as to remove any possible doubt that their customers will receive the full satisfaction which they expect.

When a farmer gives up his hard earned money, he must secure not only full value in return, but what he feels is full value according to his own ideas and his own needs. A step that secures this satisfaction is right, and is at the same time good business policy, which can not help but pay.

Wishing you continued success.

Sincerely yours,

THE PRACTICAL FARMER

Charles T. Walker

Vice President.

CW/G

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Oct. 1, 1915.

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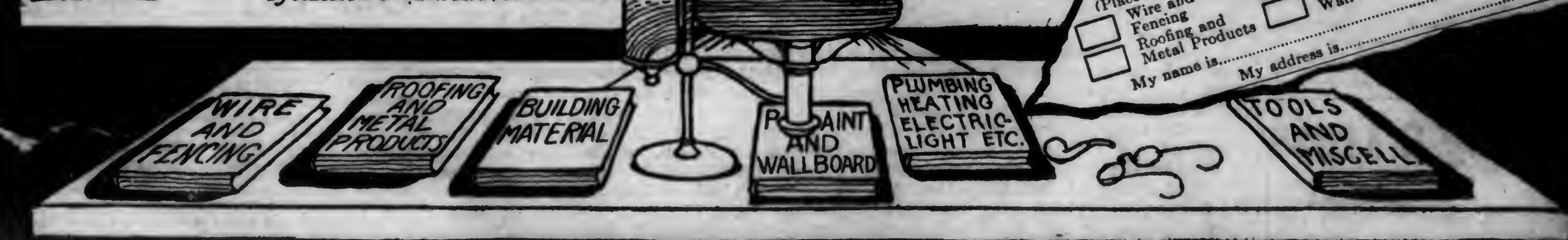
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The Practical Farmer

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Number 5

A SUCCESSFULLY MANAGED GARDEN

By CHARLES G. ADDISON

LONG experience in gardening has proved to me that the only basis of success is proper and systematic management, and that there is no branch of farm industry that requires it more than the vegetable garden in order to secure the best results in return for the labor and expense connected with it, either for home use alone or for marketing. The following is the method which I have found to be the most economical and profitable, and which I have followed for more than 25 years: Heavy manuring, thorough tillage and double cropping. My garden measures one-half acre, being an oblong square 60x40 yards. The soil is a loamy texture, originally very poor, but now brought up to a high state of productiveness. The surface is even, but not entirely level, with an inclination toward the south. It is securely enclosed against poultry, and all other intruders and not a tree of any kind is allowed to grow within the enclosure.

Late in the fall, after the crops of the preceding season have been gathered, the land is heavily covered with stable manure and deeply plowed with a 2-horse team into plats 18 to 24 feet wide and running the entire length of the garden, leaving a wide and perfectly straight furrow between each of the plats, all leading into another and wider furrow at the extreme lower end; these furrows are then cleared of all loose earth, thus furnishing sufficient drainage in wet weather, so that no water remains on the surface at any time, and the slope of the land is too gradual for any washing away of either soil or manure.

There are many advantages to be gained by preparing the land in the late fall or early winter, among which is a much earlier garden, by at least ten days, a matter of great importance; riddance of cut-worms, the larvae of which, being brought to the surface when the plowing is done, are frozen out during the winter; splendid condition of the soil for receiving the seed in the spring, as the action of frost during the winter renders it mellow and free of clods, requiring but a very few days in March for the ground to be in proper condition for planting such early vegetables as peas, potatoes, cabbage plants, onions, beets, etc., and long before the land would be in proper condition for plowing had it been deferred until spring, as it is only necessary to run a light cultivator once or twice over the land before it is ready for the rows to be laid off and the seed planted.

In addition to the stable manure which is plowed under in the fall, I apply a top dressing of pure bone dust, and at planting time this is supplemented with a heavy application of a high grade vegetable fertilizer at the rate of 1000 pounds per acre, sown broadcast and stirred into the soil just before planting, together with manure from the poultry houses.

Though many prefer to use a horse in cultivating their gardens as the more economical way, I find that under the intensive method which I practice there is no advantage to be gained by it whatever, as a good combination wheel hoe and cultivator for hand power,

a steel-tooth rake, a weeding hoe and a 4-pronged hoe are about all the tools I require, for, as no weeds are allowed to get a footing at any time it is only necessary to keep the soil from becoming crusted by repeated stirring, and as it is always light and mellow this can easily and quickly be done with the tools mentioned without the aid of a horse. Besides, there is no loss of land for turning at the ends, as would be the case if using a horse; much closer planting is admitted, and the work more thoroughly and

half-acre garden not only supplies an abundance of vegetables for home use throughout the season and for winter also, but a surplus has been sold each year that has paid several times over for all the expense connected with it, including seed, fertilizer and labor, to say nothing of plants sold from the hotbed and cold frames.

Much care is taken in selecting seed by buying from thoroughly reliable dealers. I always avoid seeds that are sold at country stores as well as government seeds sent out by Congressmen, as I have tried both in former years and greatly to my disappointment

and loss. Except on such land as is devoted to vegetables that require the whole season for their growth and bearing, such as lima beans, tomatoes, sweet potatoes, etc., two crops are secured from the same plat each year, and the diagram (see page 102 for diagram) will give a clear idea how it is done. A strict system of rotation is followed, and no crop of the same kind, except onions, is planted on the same plat two years in succession. With the exception of onions set out in the fall for early spring use I grow my onions from seed which is sown in a cold frame as early as practicable in March; when the young plants are about the thickness of goose quills they are transplanted in the garden where they produce bulbs as fine as any that are grown in latitudes far north of this, and are much earlier and larger than from seed planted the usual way. All my tomato plants are trained to stakes 7 feet long and firmly set in the ground; the stakes are set 2½ feet apart, in a single row, full length of the garden, two plants to each pole, on opposite sides, and as they grow each plant is trained to a single stem by removing all laterals as they appear, and tying the vines to the poles from time to time, as needed. This method prolongs the bearing season until frost kills the vines in October or early November. It also does away with late planting for fall use, and produces much finer fruit than when planted the usual way and left without support of any kind. I have also found by growing to poles they are less liable to rot, caused by the fruit lying on the ground. Radishes are sown between the rows of peas and beans at the same time the latter are planted. They mature rapidly and are soon out of the way. Lettuce is planted in a narrow slip close along the fence side, so that no space is given to them that could be otherwise more profitably used; so also with parsley and other herbs. I give but little attention to novelties, so-called, unless highly recommended by seedsmen in whom I have full confidence, having found that many of them are not what they are represented to be, but only old varieties under new and high-sounding names.

As to which of the many varieties of the different vegetables to grow, I have tried most all of them in the last 25 years, and the following is a list which has given me entire satisfaction: For early peas I now plant the New Prolific Extra Early; they are the



On Suitable Ground, Cantaloupes are a Big Paying Crop

(Concluded on page 102)

The Practical Farmer

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The date on the address label shows the time to which your subscription is paid; Jan. 17 means that your subscription is paid to the expiration of 1917. Renew at least one month before the expiration of your subscription to avoid missing any copies. It takes a month to change date on label, or to put a new name on our mailing list after we receive the subscription.

MARCH 1, 1916

The Garden and Truck Number

THERE is an old saying that "The way to reach a man's heart is through his stomach," and if this be the case, the garden should be held in high esteem on every farm. After looking over the mass of contributions submitted on garden and truck subjects we are more firmly convinced than ever of the increase in thought and attention being given these subjects.

To Mr. Chas. G. Addison we awarded first prize for his article on "A Successfully Managed Garden." The way in which he handles his garden is excellent, and the care of the crops, together with comments on the different varieties, will be of great value to every one. His experience is well worth studying.

The second prize goes to Mrs. Blanche Martin, and what she has to say about "Gardening for Profit and Pleasure" will interest you. It shows what can be done if one has it in one, and best of all it tells how it is done. The "farmerettes," as Mrs. Martin calls our women gardeners, will welcome her description of the flower garden, and we believe some of the "real farmers" may be a bit interested, too.

If you read Mr. James M. Bonner's article on "How I Make a Garden," you surely will get some good ideas. To this article we awarded the third prize. It is business from start to finish.

Mr. C. O. Warford is awarded the fourth prize for his excellent contribution on "Truck as an Additional Source of Income." In his article, Mr. Warford very forcibly shows how the general farmer may be greatly benefited by rearranging his rotation so that a few truck crops may be grown. Truck brings early money. There is much food for thought in what he says.

We congratulate every contributor, for all the articles were helpful and we hope our readers will find much of value in this issue.

Diversified Farming

IN looking over the situation, the agricultural outlook for 1916 is bright. During the past year fair prices have prevailed in most crops, while in some the price is much above the average.

When planning this coming season's crops we must not forget that safety lies in several crops and not in depending on one or two. The farmer who devotes the greater part of his farm to one crop because this happened to pay big the past season, runs a great risk, as does the one who shuns entirely a crop because it was not a big payer last season.

The middle of the road is the safest. There is no absolute rule that can be laid down as to what crops

to grow, as the location, soil and scores of other things determine that; but in general farming a wide variety of the crops successfully grown in your territory should be planted. Potatoes, for instance, are sometimes high and sometimes low, and the same is true of cabbage, beans, and, in fact, every other crop grown. Take the prices received for several years for a certain crop, or the prices received for all the crops one season and it will be found that they will average up pretty well.

It looks as if we will be called upon to export immense quantities of foodstuffs again this year and you surely want to be able to secure your share. "Bushels, not acres," is a familiar slogan and one full of truth. Better attend to half as much ground and do it well, than to double the acreage and work it in only a half-way fashion. The American farmer is coming into his own—be sure to get your share.

Our Supplement—Again

WITH this issue of The Practical Farmer we are again presenting an enlarged Live Stock and Dairy department in a special supplementary section. This is the second of these sections we have published, the first being in connection with our issue of February 15th; in that issue, on the first page of the Live Stock and Dairy Section, we explained our editors' idea in enlarging this department and focusing attention on it by putting it in a special supplement. We invited, and again invite, our readers to express their opinion of this program and tell us whether or not they want us to continue giving special attention to the Live Stock and Dairy department in this way. We will appreciate a letter from you giving your views on this subject, as it is only from such letters that we can tell whether or not we are meeting your wishes—and please bear in mind that The Practical Farmer desires to give you what you most wish and need in this paper.

Postal Card Your Congressman

THE question of good roads for the farmer is up to him, as far as national and state aid are concerned.

It is very likely that during the present session of Congress some provision will be made for an appropriation to be expended on road making, either in connection with appropriations by the several states for the same purpose, or direct, provided the "preparedness" campaign does not call for too much money. Some bills for this purpose have been introduced, one of them making an appropriation of \$25,000,000 for road improvements, this latter having passed the House and been sent to the Senate. This amount looks large on paper, but, after all, when spread over these United States will go but a little ways in transforming bad roads into good roads.

If the farmers would combine in an effort to have any money appropriated by Congress expended on the roads covered by the rural routes, and on no others, they will receive more benefit from national road money than from any other plan that can be devised. And a plan that will give better roads radiating from the towns and cities on which R. F. D. routes have been established will be the most benefit to the people as a whole. Anything which makes it easier and cheaper for the farmer to market his products, benefits the consumer. National aid used to build costly highways between large central points will benefit a very small portion of the population. The same amount expended on the dirt roads, which probably nine-tenths of the farmers have to use, in whole or in part, in carrying their produce to their nearest market points, will benefit a very large proportion of the population.

If the U. S. Government is to go into the road making business, which now seems probable, the farmers should be as active in securing their full share in the expenditure of the road money (as their interests and their relations with the remainder of the people deserve) as are other interests which are using their influence in the good roads movement for their particular benefit.

We suggest that if the farmers in all the states will make good use of Uncle Sam's mail facilities, and bombard their members of Congress and Senators with a postal card fusillade, they will secure what they need in the way of road improvement, so far as national aid will provide it.

The Congressmen from the rural districts have their ears to the ground, and they are very susceptible

to rural public opinion when they know what it is. A postal card campaign by the farmers would mean business to their representatives in Congress.

And the same dose applied to the state authorities would bring a larger proportion of state aid to the common roads than they are now receiving.

Why not exchange the public buildings pork barrel for a good roads pork barrel? If Congress must have a pork barrel appropriation bill, one to grease the way for better roads would be of more benefit than one to erect unnecessary public buildings, and would be a better vote getter, we think.

An Extravagant Feed

THE other day we overheard a conversation between two farmers. One had a cream separator and the other didn't. The one with no separator admitted that he could not get all the butter fat out of the milk by hand skimming, but, he added, "What we don't get the stock does."

This is true, but a bit expensive. Right here is a big leak that when stopped may turn the balance on the dairy page to the right side of the ledger. When milk is skimmed by hand anywhere from 30 to 50 per cent, and in many cases more than this, of the butter fat is left in the so-called "skimmed" milk. This is due to the fact that the fat globules being so nearly the weight of the milk, do not rise readily and are greatly retarded by adverse weather and atmospheric conditions, temperature of milk cellar, etc. Under the most favorable conditions a large part of the butter fat globules are in suspension all through the milk and do not come to the top to be skimmed, and under unfavorable conditions this percentage is multiplied greatly.

When milk is run through a separator the skim milk and butter are separated by centrifugal force and practically every bit of butter fat is separated from the milk. Not only does the separator take out the butter fat, but it cleans the milk of tissue and other animal substances as well—it makes the difference between creamery and dairy butter.

Now then, the farmer was right in saying what butter fat he couldn't skim off was not lost, as the young stock got it. Pretty expensive feed. Butter at 40 cents a pound amounts to \$800 a ton. How much more business-like to sell the \$800-a-ton product and feed in its stead numbers of other feeds with the same food value, that cost anywhere from \$25 to \$50 per ton. It is due you to save every pound of butter fat when once produced, and not feed this valuable product, as it is worth several hundred per cent. more to you on the market than in the feed pail.

The scale, cream separator and the Babcock test are the best friends of any farmer who owns a cow. Have you realized this?

Bulletin Helps for Farmers

Extension Bulletin No. 7, published by the New Jersey State Agricultural Experiment Station, was prepared by Miss M. Anna Hauser, extension specialist in home economics. It contains some general instructions for cooking; a discussion of milk and eggs with respect to their composition, value as food, digestibility, methods of preservation, and other properties; and recipes for use in preparing milk and eggs. Any person interested can obtain this bulletin without charge by addressing a request to the New Jersey State Agricultural College, New Brunswick, N. J.

Farmers' Bulletin No. 704, issued by the U. S. Department of Agriculture, Washington, D. C., is on "Testing Seed Corn for Germination." Testing seed corn is always a profitable farm practice and especially so this year, as so much of last year's corn crop was late in maturing.

The following publications relating to poultry are available for free distribution and may be had from the U. S. Dept. of Agriculture, Washington, D. C.: Farmers' Bulletin No. 51, "Standard Varieties of Chickens;" Farmers' Bulletin No. 64, "Ducks and Geese;" Farmers' Bulletin No. 200, "Turkeys;" Farmers' Bulletin No. 234, "Guinea Fowl and its Use as Food;" Farmers' Bulletin No. 287, "Poultry Management;" Farmers' Bulletin No. 390, "Pheasant Raising;" Farmers' Bulletin No. 452, "Capons and Caponizing;" Farmers' Bulletin No. 528, "Hints to Poultry Raisers;" Farmers' Bulletin No. 530, "Important Poultry Diseases;" Farmers' Bulletin No. 562, "Organization of Boys' and Girls' Poultry Clubs;" Farmers' Bulletin No. 574, "Poultry House Construction."

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Headquarters for Farm Seeds

that are northern grown, hardy, acclimated and therefore adapted to the Northern and Eastern States. Nearly all the New England and Middle States and parts of West Virginia, Ohio and Michigan are within the 300 mile circle from Honeoye Falls, where our Farms and Seed Houses are located and Farmers living in this territory are our Natural customers.

DIBBLE'S FARM SEEDS tested and thoroughly tried out on our own Farms are sure to meet your requirements for hardiness and vigor and intelligently farmed, your lands should produce bumper crops. Freight rates are low, and we have two great railroad systems to carry Farm Seeds from our Farms to yours in a few days, thereby avoiding those tedious delays which frequently occur when freight is shipped from a great distance. For a quarter of a century we have been growing and selling but just one grade and that the best money can buy. So far as we know, we are the only American firm selling but the one, and that, the highest possible quality Seeds. 25 years ago our sales were 40,000 lbs., or 20 tons. The last two years from 8,000,000-10,000,000 lbs., or 4,000-5,000 tons, have been shipped each season direct to the best Business Farmers of America, and our trade is steadily increasing.

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Dibble's Farm Seeds are sold on a ten-day-money-back-if-you-want-it guarantee subject to any test you choose to make on your own farm or to have made for you.

20,000 Bushels Tested Seed Corn

"The Best Seven Varieties" both Flint and Dent adapted to the Northern and Eastern States for crop and the Silo. Dibble's Big Red Dent, Improved Leaming, Early Yellow Dent, White Cap Yellow Dent and Mammoth White Dent, the big Northern grown White that produces ears as well as stalks are priced as follows: Bushel \$2.00; 2 bushel bag \$3.50; 10 bushels or over \$1.50 per bushel. Bags free.

MAMMOTH YELLOW FLINT, the largest growing, most productive Flint grown with a record of 243 bushels from one peck of Seed in New Hampshire and 230 bushels per acre in New York and Sanford's Extra Early White Flint at \$2.00 per bushel; 2 bushel bag \$3.50; 10 bushels or over \$1.65 per bushel. Bags free. Why pay more?

Every lot tested in our own Laboratory for moisture content, purity and germination. **AVERAGE OF ALL TESTS MADE TO DATE ABOVE 95% GERMINATION.**

Dibble's D. B. Brand Northern Grown Alfalfa, Clover and Timothy Seeds 99.50%

Pure or Better, the highest grade obtainable. Every bag tested both for Purity and germination in our own Laboratory and sold direct to you at wholesale Prices.

Last year, average test of all Alfalfa Seed we sold was above 99.75%, and of clover above 99.70% purity. Is not this the kind of seed you want to sow on your Farm?

Address Edward F. Dibble Seedgrower, Box E, Honeoye Falls, N. Y.

Why not buy direct and save money as we ship "From our Farms to yours"



Dibble's 25th Annual Farm Seed Catalog the leading strictly Farm Seed Book of the year, and a new quarter century anniversary souvenir book written by Mr. Dibble, containing a number of views of farm scenes on the Dibble Farms FREE to every Farmer.

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NOTE OUR LOW PRICES, 100 lb. bag, enough to sow one acre, \$3.00; 10 bus. \$9.00; 100 bus. lots or over \$5c per bus. Bags free. Why pay more?

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Pedigree Stock Northern Grown from selected stock seed. "The Best Fifteen Varieties," early, intermediate and late in any quantity from barrels to car loads at the lowest possible prices consistent with the highest possible quality.

We have warehouses full of potatoes saved from fields that were free from blight, where the foliage grew rank and green till killed by frost.

Potatoes are high in price, but that is no reason why you should pay fictitious prices for mediocre seed, when you can get Dibble's Pedigree Seed Potatoes at live and let live prices.

Fertilizer Quality

When you buy fertilizer remember you are buying what is in the goods and not merely a weight of two thousand pounds.

When a smelter buys gold ore he buys not merely two thousand pounds but he insists on knowing how much gold is in the ore, and you should know the amount of active nitrogen, which is the gold of the fertilizer.

For further information write

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Gives results of our 30 years experience with small fruits, tells how to select, plant, cultivate, etc. Buy the

Plants That Pay

Our true-to-name small fruit plants are hardy and ever-bearing. 500 acres devoted to their culture. Several varieties for your soil and climate. Packed fresh for shipment. Send for the Berry Book today.

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gives bigger, better yield

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Helps his wife to plan her table in busy times. Saves work and worry, saves buying so much meat, gives better satisfaction to the help. A good garden will be almost indispensable in your busy life without proper tools. They cost little and save much hard work.

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will sow, cultivate, ridge, furrow, etc., better than you can with old-fashioned tools and ten times quicker. A woman, boy or girl can do it. Can plant closer and work these hard tools while the horses rest. 38 combinations from which to choose at \$2.50 to \$12. One combined tool will do all of the work. Ask your dealer to show them and write us for booklet, "Gardening With Modern Tools." Free.

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HOT BED SASH

80¢

Cypress, well made with cross bar, blind joint, glass, \$1.50 per foot.

C. N. ROBINSON & BRO.
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and small fruit plants. Wonderful new sorts. Greatest bargains ever offered. Save money: make money by sending for our valuable book, "How to Succeed with Strawberries." FREE. Berry Book, Box 321, Gladstone, Iowa.

POTATOES WANTED

In car loads or small lots. Active demand at good prices. Also Apples, Onions, Hay, Potatoes, etc. Write us for market prices and terms. **GIBBS & BRO.**
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A little device that prevents all breakage of farm machinery due to striking rocks or stumps. Attached to any piece of machinery. Satisfaction guaranteed. Write for particulars. **Don Hester & Dykshorn, Corvallis, Ore., Dak.**

Strawberry Plants \$2.00 per 1000. Catalog of 83 varieties including the Fall Bearers, free. L. G. Tingle, Box 66, Tilden, N. C.

SEED CORN Send for descriptive circular.

CHAS. W. WAMPLER, Harrisonburg, Va.

be sure of getting what is wanted it pays to go to the expense and trouble of putting in a hotbed to produce them. This I have had to do and find that it pays very well indeed, even for my own use only, but I have also found that it is usually possible to sell enough plants to pay for the trouble.

I make all my rows wide enough to admit of proper cultivation. Six or eight-inch rows may do for a toy garden, but even 12-inch rows are too close for me. I seldom make rows less than 24 inches and never less than 18, while 30 inches is my favorite width for most crops where hand plows are used. Of

course, where horse cultivators are used, and for crops that require more room, wider rows must be provided.

After all is said, the cardinal requirements for making a garden, so far as my experience goes, are a good plan to work by, good seeds to plant, up-to-date tools for keeping the weeds in check, a good sprayer and a supply of insecticides and fungicides, and coupled with these a willingness to work. Eternal vigilance might also be added, for no matter how willing one be to work or what may be at hand to work with, if things are not done at the right time, very often they are done in vain.

FOURTH PRIZE ARTICLE

By C. O. WARFORD

Truck as an Additional Source of Income

It is universally conceded that market gardening and truck farming offers the greatest opportunity to a man to secure the most money from a given number of acres. If the dairyman or the general farmer with a hundred or more acres under cultivation would set aside, say, 10 or 12 acres for truck crops, he could add several hundred dollars each year to his cash receipts.

Tomatoes, string beans, peppers, sweet corn, eggplant, squash and cabbage are all crops that may be added to the general farm crops without much trouble to the ordinary farmer.

For the growing of any of these crops no special equipment is needed. The same tools that are used to cultivate corn and potatoes will do for the cultivation of the truck crops.

In some respects the ordinary farmer has the advantage of the market gardener in the growing of these crops, for where the market gardener has to grow these crops intensively and in continuous rows in order to conserve and utilize his limited acreage, the general farmer, due to the fact that he has an abundance of land to use, can spread the crops out, in many cases planting in check rows so that cultivation can be done each way by horse work, while the market gardener has to use hand work.

Then the general farmer can practice a very wide rotation, while the market gardener or truck farmer is restricted to a very narrow one. A market gardener who is growing cabbage, cauliflower, turnips and radishes, for instance, has a very hard proposition before him, for all these vegetables are related and are subject to the same diseases, with the consequence that in a few years his land becomes so full of disease that he is almost forced out of the business and at least has to adopt some other crops in order to keep in the business at all. But the general farmer can grow these crops indefinitely, for, as he has so much land at his disposal, as soon as he finds the land getting "sick" of a certain line of crops he can seed down the land and cut hay from it and the returns from the hay crop following garden crops will be nearly double the crops cut on the ordinary hay farming plan. Another part of the farm can then be used for the garden crops and as the land will be practically virgin soil to the garden crops they will be clean, of high quality, and easily kept free from weeds.

One of the nicest crops that the general farmer or the dairyman can grow is the squash, either the Hubbard or the Boston Marrow variety. The demand is always constant, both in the open market and by the canning factories, and if a farmer lives quite a distance from his market it is an article that does not have to be marketed as soon as it is fully grown, but can be held

over a long period of time and hauled to market in the leisure season or whenever convenient. Then, being grown like a field crop, no special experience or equipment will be required as is needed in growing some distinctly special garden crop, such as lettuce or onions. The squash may be planted in check rows 6x6 feet apart, three seeds to the hill, or may be placed in continuous rows with the vines 2 feet apart. After the plants come up about the same amount of cultivation as is given a crop of corn will produce a crop of squash, with the advantage in favor of the squash, that they will bring in the market at least \$100 per acre where the corn will \$50. Planted 6x6 feet apart means about 1200 hills per acre, and a yield of only three squashes per hill at 5 cents each will bring in the tidy sum of \$180.

If the farmer wishes to go a little more intensively in the gardening business the pepper offers another great opportunity. This is another crop that can be grown to advantage by the farmer at a distance from the market, as it is comparatively light in weight and is always sold either in bulk or by count. The crop is no harder to grow than potatoes and after the plants are set in the field the same cultivation that will produce a \$100 crop of potatoes will produce \$200 worth of peppers. The plants to set an acre of land will cost not much more than the cost of the seed potatoes. Peppers are generally set about 3 feet by 2 feet, or about 7000 plants per acre. A man may grow his own plants in cold frames at a cost not to exceed \$1 per 1000, or he may purchase them at the seed houses at a cost of \$5 per 1000, but these plants are generally large, hardy, transplanted plants for early setting, and if these are used a very early crop is produced that will often bring \$100 or more per acre over the late planted crop. But the late crop is essentially the one that is adapted to the farmer who wishes to try out the garden proposition, and the plants for this need not cost more than \$1 per 1000 ready to set in the field, or \$7 total cost of plants for the entire acre. Setting out the plants will cost not to exceed \$1 per 1000, even if done by unskilled labor, so the total cost of the plants set in the field ready for cultivation will not exceed \$14, and I doubt if seed potatoes can be purchased, cut and planted for much less.

The cultivation from this point on is just about the same as for potatoes, with the exception that the peppers need not be sprayed so often as the potatoes, about once with combined Bordeaux and arsenate being sufficient. When harvesting time comes the peppers are picked green, placed in barrels and marketed, or if you get a little behind on marketing the green ones the remainder, if left to ripen, will sell all the better



Maule's Seeds For the Home Garden

For 59 years successful gardeners have reaped bountiful crops from Maule's seeds, and this year more than a half a million growers will insure success by using them in their gardens.

Maule's Commercial Yellow Globe Onion

A wonderful variety for the garden or commercial growing, yields heavily, good size, mild flavor, suitable for all purposes. See description on page 69 of

Maule's Seed Book For 1916

Beats all we have issued. 176 pages about 170 pages about Vegetable, Farm and Flower Seeds, Plants and Bulbs. Description truthful, accurate. Write today—we will mail this book

Send 10 cents, mention this paper, we will enclose in the catalogue a packet of the above "GIANT" Pumpkin.

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This is the 80th year that Buist's Seeds have been the favorites of America's most experienced gardeners. Since 1833 their quality has never deteriorated. These seeds produce big crops of the right kind. This Year to Our Friends and New Customers We Make the Following FREE Offers

For every dollar you purchase in packets and ounces we will allow you an additional 25c worth of your own selection, in packets and ounces. In addition we will send you five packets of our finest flower seeds, all prize winners from early spring to late fall. Get these premiums now—and send for our helpful Free Garden Guide.

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Townsend's Plants Hold the World's record.

Superb and Progressive strawberry plants, in less than 12 months from time plants were set.

This book fully explains our 20th century methods in growing

WORTH ITS WEIGHT IN GOLD. Send postal today to E. W. TOWNSEND, Salisbury, Md., Dept. 30

WHITE SWEET CLOVER 5¢

BEST SEEDS—MAKES KNOW—UNIVERSITY

The greatest clover plant that grows. Superior to all as a fertilizer. Equal to alfalfa for hay. Excess for pasture. Builds up worn-out soil quickly and produces fine crops, worth from \$60 to \$125 per acre. Easy to start, grows everywhere, on all soils. Write today for our Big 100-page free catalog and circular about unexcelled and scientific seed clover. We can save you money on best tested, guaranteed seed. Sample Free.

A. A. BERRY SEED CO., BOX 259 CLAMONA, IOWA

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Ferry million business from Free Frost Plants. Varieties: Early Jersey Wakefield, Charleston Wakefield, Succession, Flat Dutch, and Drumhead. Price, 50¢ for \$1.10 to \$1.00 for \$2.00, postpaid and insured. By express, 100¢ at \$1.25; 500¢ to 10,000 at 90¢; 15,000 to 20,000 at 75¢ per 1000. Prompt delivery and good strong plants guaranteed. Write for catalogue.

PIEDMONT PLANT CO.
Albany, Ga., and Greenville, S. C.

Maine Seed Potatoes

Best medium and late varieties. Selected stock, free from scab, blight and other diseases. Write for prices.

B. H. Wallingford, Auburn, Maine

at higher prices. A well grown pepper plant set early in the season, as soon as danger of frost is past, will produce at least four quarts, or about 300 barrels per acre, which at \$1 per barrel means \$300. At only 50 cents per barrel there would be \$150 per acre, quite a lot more than the average crop of potatoes bring, and the added advantage is that at the last cultivation of the peppers rye and vetch are sown, so that the following spring a heavy crop of forage may be gathered for stock feeding, or the entire yield of green matter may be turned in to enrich the soil. So, also, tomatoes, eggplants and string beans may be grown to great profit and advantage, only these latter crops are more perishable than the ones described before, and

the market has to be more convenient to reach, although tomatoes, string beans and eggplants are shipped all the way from Texas and Florida and reach the New York market in good condition. Some time ago it was shown by the College of Agriculture of New York State that the labor income of the farmer was in direct relation to his diversity of crops, and that the farmer and the dairyman that had the most cash crops to sell during the season were the ones who were making a profit. Vegetables in most cases offer the farmer just the opportunity he is looking for to increase his income, and I would advise any farmer to send to his state experiment station and secure all the bulletins on market gardening.

A Review of Our Garden Articles

By W. F. MASSEY

There are some things mentioned by the various contributors to the Garden Special which I wish to say something about. In the first place we do not print free advertisements of the various seedsmen from whom the parties may buy their seeds.

Several speak of the club root in cabbages. I have found that when the soil abounds in lime there will be no trouble from club root. In our soils near the salt water where there is an abundance of oyster shells in the soil there is never any club root, and if growers will use ground limestone or ground oyster shells at the rate of two tons per acre they will keep clear of club root if the application is renewed about once in five years.

Several speak of the Chalk's Jewel tomato as the early one. This is really a fine second early tomato, but Bonny Best, which seems to have been a selection from Chalk's Jewel, is a week or ten days earlier and fully as good a tomato. I have found that a good strain of Earliana is the earliest, and Bonny Best is a close second and of far better quality. John Baer is also a good second early and more than a week later than Bonny Best. In fact, it is so identical with Chalk's Jewel that there is no need for it.

In making a hotbed the general advice is to put the manure in a deep pit. I object to this, as the rain water will leak in and cool the manure. I would make the bed in a slight pit, not over 10 inches deep, and the better part of the manure packed above ground, and wider by several inches than the frame to set on it. Then bank the soil from the excavation over all the outside manure. It is best to use a thermometer in the bed and wait until the rankness of the heat subsides. When it falls to about 85 you can sow the seed if the soil is made about 5 inches thick over the manure.

Then one advises the use of boiling water after sowing. I would not use this, but always water just so hot that it is rather too hot to hold the hand in long. Never water a hotbed with perfectly cold water. For hardy plants like cabbages and onions I prefer to use a cold frame rather than a hotbed. A cold frame under double glazed sashes will answer well for this class of plants. In fact, I have sown tomato seed in a frame under double sashes in late February here and had fine success.

My early tomato seed, Earliana and Bonny Best, were sown in flats in the greenhouse February 7th. If I get a good stand of these, all right. If not there will still be time to make another sowing later in February. To follow these I sow seed in a cold frame in March, and later still some in the open

ground so as to have plenty of late-grown green ones to wrap in paper at frost time and store for early winter use.

I have had numbers of letters asking me if the concentrated lye cannot be used in place of potash. This lye is not potash, but is caustic soda, as the government compels them to state on the label, and soda will not take the place of potash as a fertilizer.

About early March is a good time to sow some radishes and early carrots, if wanted, in a cold frame in heavily manured soil. Beets of the Egyptian variety can also be sown in the frame and the thinnings can later be transplanted to the open ground. I sow the white tipped Scarlet Turnip radish and the French Forcing carrot. For outside sowing late in spring I sow Danvers Half Long carrot.

Our market gardeners now use the Irish Cobbler to the exclusion of all other sorts of potatoes. I prefer, for family use, the old Early Ohio or the white skinned Bliss Early. The Cobbler makes a good crop, but is not of as good quality as the others named.

If you start your tomato and pepper plants in a hotbed do not imagine that that is all that is necessary to get early plants, for plants left crowded in the hotbed will be poor things to set out directly from the bed. It takes a very small hotbed to start plants for a good many sashes on cold frames, and unless the plants are transplanted to a cold frame and given plenty of room

Ain't it Bowker's?

THIS STORY was told one of our travelers by one of his agents.

"A farmer backed his team up to my store one day last spring, and asked me to throw in five bags of Bowker's Fertilizer. As the war shortage of potash was on, and as I wanted him to understand just what he was buying, I started to tell him that the analysis was changed somewhat from the previous year,—that the percentage of potash was lower, etc. He looked up at me sharply and said rather earnestly, 'Ain't it Bowker's?' 'Oh, yes,' I said, 'It's Bowker's all right.' 'For the land's sake—throw it in there, then,' said he, and drove away with it, wholly satisfied."

Have you ordered your Bowker's yet?

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BOSTON & NEW YORK

Lovett's Lucky Berries

Promote Good Health and Happiness
They Succeed Where Others Fail

JOY—The best and biggest Blackberry.
JUMBO and BRILLIANT—Best Raspberries.
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MY CATALOG No. 1, an illustrated book of 64 pages, tells all about them and describes with prices all the good old varieties of Small Fruits as well. It gives instructions for planting and culture and tells about the beautiful new Rose I am giving away. It is free.

Large plants for quick results. Special feature. 200 acres; 35th year.

J. T. LOVETT, Box 140, Little Silver, N. J.

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My new 1916 Buggy Book is now ready. It is bigger and better than ever—the finest vehicle catalog ever published. I want you to have a copy this year. Every year thousands of buggy buyers write for my big Free Catalog. They read it to know how fine vehicles are made and what they should cost. They know that for 10 years Split Hickory rigs have set the pace in style and price. Just drop me a postal and I'll send it free—postpaid. Shows 150 styles—more than you could find in 20 stores. Contains the most surprising, money-saving announcement any vehicle manufacturer ever made. Write for your Free copy TODAY. Do it NOW—before you forget.

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cut down work and boost your crops

Old-time farming no longer pays—these scientific tools do the work of 3 to 6 men, give bigger yield, and save their cost in a single season. Invented and made by a practical farmer and manufacturer, with half a century's experience. Planet Jrs are strong and lasting. Every tool fully guaranteed.



72-page Catalog (184 illustrations) free! Describes over 70 tools, including 12 entirely new ones and improvements to our Seeders, Wheel-Hoes, Horse Hoes, Harrows, Orchard and Beet-Cultivators. Write postal for it!

S. L. Allen & Co. Box 1711 Philadelphia

No. 25 Planet Jr. Combined Hill and Drill Seeder, Double and Single Wheel-Hoe, Cultivator and Plow is a splendid combination for the family garden, onion grower, or large gardener. Is a perfect seeder, and combined double- and single wheel-hoe. Unbreakable steel frame. Capacity—2 acres a day.

Planet Jr. 12-tooth Harrow, Cultivator and Pulverizer is stronger, sturdier in action, and cultivates more thoroughly than any other harrow made. Non-clogging steel wheel. Invaluable to the market-gardener, trucker, tobacco or small-fruit grower.

DIBBLE'S SEED POTATOES

Pedigree Stock. 80,000 bushels in store

Northern grown from selected Stock Seed. We have several frost proof warehouses full of medium sized tubers from fields that were absolutely free from blight. "The Best Fifteen Varieties," early, intermediate and late in any quantity from barrels to carloads, at the lowest possible price consistent with the highest possible quality.

Headquarters for Seed Potatoes

Also full stocks of D. B. Alfalfa, Clover and Timothy Seed 99.50% pure or better. 50,000 bushels Seed Oats, 50,000 bushels Seed Corn, Canada Peas, Vetch and all Farm Seeds adapted to the Northern and Eastern States. Dibble's Fifteen Varieties Farm Seed Catalog and a new souvenir book on "Money-making Farming for Eastern Farmers," written by Mr. Dibble Jr. to every Farmer. Address: Edward F. Dibble Seedgrower, Honeyvale Falls, N. Y., Box E. Nearly 5000 acres in the Dibble Seed Farms. Buy direct and save money.

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INVESTIGATE

Before buying any Cultivator see the big catalog describing the KHAUS Pivot Axle CULTIVATOR. The Longest lived Cultivator. A slight foot pressure moves the shovels and wheels in motion. The horses furnish the power, the driver only steers. CULTIVATES HILLSIDES, UNEVEN LAND AND CROOKED ROWS AS EASILY AS LEVEL GROUND. Simplest in construction—least number of parts—nothing to get out of order. Steel frame. All castings malleable iron. Every part accessible. Built for wear and work. Light draft and perfect balance. Made in high and low wheel and KHAUS PIVOT GEAR. Can be equipped with AKRON FERTILIZER DISTRIBUTOR. The greatest improvement in recent years. Applies commercial fertilizer while cultivating. Our booklet contains most up-to-date and valuable information. Send for it. THE AKRON CULTIVATOR COMPANY, DEPT. 31, AKRON, O.

The Clipper Improved No. 1-B Grain and Seed Cleaner



This Mill has a principle that is different from all others. For years it has been thoroughly tried out and adopted by thousands of the best farmers, the U. S. Dept. of Agriculture, Agricultural Colleges, Experimental Farms and hundreds of the leading seedmen, seed corn growers, etc.

Our is the only mill making use of the "vertical blast" which actually weighs every seed and kernel, separating the light, shrunken, immature seeds from the plump, heavy mature seed, 90% of which will germinate under test. This point alone makes much of the difference between crop success and failure.

No Mill Will Do Good Work Without the Right Kind of Screens.

We furnish 12 screens for cleaning and grading all kinds of seed grain, seed corn, all kinds of clover, alfalfa, timothy, millet, flax, peas, cow peas, soy beans, etc. And, after the most careful study and tests in actual work, we guarantee this screen outfit to be the best that has ever been offered with any mill. There are screens for clover containing buckhorn and plantain, timothy containing pepper grass, cockle from wheat and other difficult separations.

The No. 1-B is sold under a 30-Day Guarantee of Satisfaction or money refunded. Price complete, cost of the Mill \$125.00 cash, FREIGHT PREPAID to your R.R. station. In Successful Farming Three Factors are Prominent—the Soil, the Man and Good Seed. The Clipper Cleaner puts success within your reach by insuring Good Seed.

A. T. FERRELL & CO., SAGINAW, MICH.

and are set deeper to get a mass of roots they will be no better than plants from the open ground.

Here I set the plants 4 inches apart in the frame in late March, for we can generally set them out before the last of April. I never use the dirt bands, but do sometimes use earthen pots. But the transplanted plants come up with a trowel with a mass of soil and are set in holes filled with water and never wilt at all.

Eggplants I do not sow until first of March, for I grow these on in pots until large and set them out in early June. Trying to harden off eggplants in a frame as we do tomatoes usually results in stunting them. I pot them first in 2½-inch pots and shift them to 4-inch ones and have plants with leaves larger than my hand by time to set them out after the soil is warm.

No time should be lost in getting the early peas and early potatoes in the ground as soon as the soil can be work-

ed. Down here they are in the soil now, at least the peas are. A good strain of the Alaska type is the best for early sowing, and soon after I sow Sutton's Excelsior and Thomas Laxton, both very dwarf peas and better quality than the extra earlies. In March I sow the old Champion of England and stretch 5-foot chicken wire netting for them to climb on. Parsnips and salsify can be sown as soon as the soil is in condition for working, but down here I prefer to sow later, for they are apt to get overgrown and woody sown too early here, and the salsify may even run to seed. But there is less danger of this North, and there the sowing should be early.

Beets will stand a good deal of frost if you get them in the rough leaf before they are hit, and I always take some risk and sow some in late February here.

Do not grow sweet peppers and hot peppers near each other, for the hot ones will make the sweet ones hot the same season.

A Successfully Managed Garden

(Concluded from page 95)

best extra earlies I ever grew; for second early I like the Telephone best, and for late crop there is none I like as well as the Champion of England.

Beets—Early Blood Turnip.

Potatoes—Irish Cobbler for early, Green Mountain for late.

Onions—Yellow Danvers.

Cabbage—Early Wakefield and Late Flat Dutch.

perfection that I plant no others except a very few Early June Pinks, which ripen a few days sooner than Chalk's Jewel, but their bearing season is soon over, while Chalk's Jewel continues throughout the whole season.

I sometimes have a narrow bed of strawberries extending the full length of the garden close to the fence, and a row of currants, gooseberries and rasp-

Diagram of Garden as described in this article, showing how it is arranged for double cropping.

Currants and Gooseberries	Lima Beans and Tomatoes, trained to poles.			Raspberries
	Sweet Potatoes.			
	Parsnips, Carrots and Salsify.			
	Early Corn, 3 plantings in May, followed by late Cabbage in August.			
	Sweet Corn, 3 plantings, May and June, followed by Turnips 1st September.			
	Early Cabbage in April and Onions in April, followed by Sweet Corn in July and Celery in August.			
	Squash, String Beans, Beets, Cucumbers, etc., followed by late Potatoes.			
	Early Potatoes in March, followed by Winter Cabbage in August.			
	Peas, Early, Medium and Late, followed by Beans, Beets and Cucumbers.			
	Strawberries			
Strawberries				
Strawberries				

Squash—Early White Bush for summer; Burpee's Fordhook for winter.

Cucumbers—Long Green.

Bush Beans—Burpee's Stringless

Green Pod. Pole Lima Beans—Early

Leviathan. Bush Limas—Burpee's Improved Bush.

Corn—Early Adam and Evergreen

sweet.

Parsnips—Hollow Crown.

Carrots—Oxheart.

Salsify—Sandwich Island.

Turnips—Early Purple Top.

Tomatoes—Chalk's Early Jewel, both for early and late has given me such

berries could be grown along the fence side at the ends, without interfering with the vegetables.

I have had many years experience with vegetable growing, and with much success, regardless of weather conditions, which I ascribe to the methods which I have endeavored to explain in the foregoing article as simply the result of system and a determination to succeed, together with fondness for the work and an effort to have the result of each season surpass those of the former, by avoiding mistakes of previous years as far as possible.

U. S. Expert Says Farmer Neglects Business Side

"Too many American farmers today are merely giving themselves hired men's jobs. Few of them attain the ambition of the business man who expects to make interest on his investment, wages for his time, and a profit besides; all because they fail to realize that farming is a business as much as running a steel plant, a saw mill or a bank," said Carl S. Vrooman, assistant secretary of the United States Department of Agriculture, in his address at the Pennsylvania State College on Pennsylvania Day. Mr. Vrooman was discussing "The Business End of Farming," before an audience that was largely composed of soil-tillers, and his remarks created a profound impression.

"For years," said Mr. Vrooman, "the maximum yield per acre has been held up as the goal toward which the farmer must strive; agronomy has been preach-

ed as the beginning and end of agricultural science; the salvation of the American farmer has been hitched to bumper crops. Today many farmers are questioning the truth of this. What they want is not only large production, but profitable production.

"Among the factors that stand out prominently in the solution of this problem are rural credits, a satisfactory system of land tenure, the co-operative purchasing of supplies, and facilities for marketing farm produce. In the meantime we need have no fear of over-production. There are persons who fear that a general adoption of the principles of scientific agriculture will result in such an abundance of agricultural products that prices will be ruinously low. From the standpoint of pure agronomy, they say our average yield per acre of wheat, for example, can be doubled."

Garden Queries Answered

Inoculating Peas.—D. W. Delaware writes: "I want to grow garden peas for the canner this year, on land that was in cow peas last year. I am told that the cowpeas inoculate the soil for the garden peas. Is that right, or will I have to use some other means to inoculate the soil?"

Possibly the cowpeas may inoculate for the garden peas, but I think it is doubtful. In fact, I have never had an experiment to prove it or to disprove it. You can buy a good commercial culture for inoculation, and it would be best to make sure that the soil is inoculated. If canning peas have been grown there before there will be no need for inoculation, or if you can get soil from a field where peas have been grown you can use a barrel or more of that per acre.

Heating a Small Greenhouse.—J. W. B. writes: "I have a small greenhouse to winter over some plants and to start the garden plants in spring. I have been trying to heat it with an oil stove. I find this unsatisfactory, and the fumes from the stove seem to injure the plants. You have mentioned having a small greenhouse, and it would be interesting, doubtless, to more than one to tell us how it is heated."

My greenhouse is a little lean-to on the east end of my office building, and a door from the office opens right into it. I bought from a dealer what they call a tank heater. This is a small cylindrical hot-water boiler. I bought with it over 100 feet of 2-inch pipe and an extension tank. The boiler proper is only 11 inches high and 10 inches in diameter, set on to an ash pit below and with an ordinary stove top above with lid for filling in the coal. I burn hard coal of nut size in it. The boiler sits in the cellar under my office and the floor pipe comes straight up through the door to the expansion tank, an open tank placed in the corner of the office. This tank is at the highest point of the piping to take off the air, and from it

the pipe runs down grade to the radiator in the greenhouse, which consists of eight lines of 2-inch pipe 9 feet long hung on the wall under the greenhouse bench, and from the bottom of this coil it returns to the boiler. The whole outfit cost \$30.95 and the plumber charged me \$16 for installing it. It is the most effective heater for its size that I have ever seen. In moderate weather with the door left open it heats both the greenhouse and the office, but I have a grate in the office to use in cold weather. The boiler is run with a single hod of coal for 24 hours. At bedtime I get the pipes hot and fill up the boiler with coal, shut the damper and go to bed and never think more about it until about 7 o'clock in the morning, and I usually find the temperature in the greenhouse up to 55 or 60 degrees. This is the most economical plan for heating a small greenhouse that I know of. This little boiler would heat more radiating surface if run harder, but it heats my little place well enough without driving. In this house I can propagate a lot of bedding plants, such as geraniums, etc., and in early spring when I am starting my tomato plants I hustle the geraniums and chrysanthemums out into a cold frame to make room for transplanting the tomatoes and eggplants. Then in summer with the glass shaded I get a glorious bloom of gloxinias and tuberous rooted begonias, and the tubers of these are dried off in the fall and kept in a box of sand all winter out of the way of the winter propagation. I never carry any coleus plants over winter, but plant a few of the best bedding varieties in an out-of-the-way place and let them run to seed, which I save. Then in spring as I am sowing my tomato seed I sow the coleus seed and select from the seedlings all I want to plant.

The tomato seed is sown early in February in shallow boxes or flats and as soon as the plants are large enough to handle I put them in 2½-inch pots and about the middle of March transplant them from the pots to the cold frames 4 inches apart, to get strong and to harden them off for setting here in April. I have found that, as a rule, one should sow the early tomato seed about ten weeks before the time it is usually safe to set them out in the locality. This I consider a good rule for any section. Eggplants I never sow until March, for I grow these in pots altogether, putting them first into 2½-inch pots and when these are well filled with roots I transfer the plants to 4-inch pots and grow them strong and never attempt to harden them as that would stunt them; and never set them out until the soil is warm in June. They are then big, sturdy plants with leaves larger than my hand. Peppers I treat in the same way for a few early ones, but the main crop of sweet peppers which we want for pickles I sow the seed in a frame and transplant directly therefrom, as the peppers are very easily transplanted.

A little greenhouse is very useful and does away with the necessity for making hotbeds and all the trouble of working over them. It is far more comfortable to care for plants in the house than to have to stoop over a hotbed and be everlastingly handling sashes. But there is need for an abundance of sashes on cold frames for hardening off some things and for sowing seed of other things.

Pumpkins and Cabbage.—M. L. Y. Pennsylvania writes: "What is the difference between a pumpkin and a squash, and is there danger of crossing with each other? I grow a lot of cabbage. The trade here calls for large heads. I grow Surehead, Flat

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Syracuse Sale Pavilion Syracuse, N. Y., March 7-8, 1916

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Dutch and Drumhead. Some grow solid, while many grow too loose. The greater part will be as loose as a head of lettuce. Can you tell me the cause or give a remedy?

The squash is Cucurbita melopepo, and the pumpkin is Cucurbita pepo. So they are very closely allied and will cross freely.

The Danish Ball Head cabbage makes a very hard head, not as broad as Drumhead, but very solid. It does not seem to be a success on limestone soil, but on other soils does very well. Probably if you use raw bone meal heavily it will tend to make the cabbages more solid. An excess of nitrogen tends to make loose heads. Cabbages demand plenty of phosphoric acid in the fertilizer. About 1000 pounds per acre of raw bone meal will make good cabbages.

What to Sow.—G. W. A. North Carolina, writes: "Now that we are getting the seedmen's catalogues, we who are inexperienced in garden matters, are puzzled by the long lists of varieties, and would be helped by your giving us a list of the best varieties, those that you have proved good."

Asparagus—Palmetto is best. Will tell further about growing it.

Beans, string—For earliest, Black Valentine; main crop, Burpee's Green Pod.

Stringless—Bush limas, Fordhook; climbing limas, in the North any of the varieties of the large white lima, and in the South the small lima. For pole string beans Berger's Green Pod Stringless.

Cabbage—Early Wakefield, Copenhagen Market, Succession, Late Flat Dutch and Danish Ball Head.

Celery—Giant Pascal for your section, while North the Golden Self-Blanching will answer; but in your climate you cannot grow early celery, but must grow the winter crop.

Cucumbers—Davis Perfect for early and late.

Eggplant—Black Beauty.

Corn—Norfolk Market, Country Gentleman, Stowell's Evergreen and Kendall's Giant; north of Philadelphia the Golden Bantam will be found excellent, but is worthless South.

Horse Radish—Mallory Kren.

Muskmelons—Burrell's Eden Gem and Pollock.

Watermelons—McIver Sugar, Tom Watson.

Onions—Norfolk Queen, Southport Globe, white or yellow, Prizetaker and for your section, Yellow Potato Onion planted in the fall.

Okra—Perkins' Mammoth.

Peas—Nonpareil, Sutton's Excelsior, Stratagem and Champion of England.

Potatoes, early—Irish Cobbler, White Skin Bliss, Early Ohio; late potatoes, Sir Walter Raleigh, Green Mountain, and Hoosier.

Radishes—White Tipped Red Turnip for early, and Celestial for fall.

Rhubarb—Linnaeus.

Salsify—Sandwich Island.

Spinach—Norfolk Savoy.

Tomatoes, early—Langdon Earliana.

Bonny Best; later, or main crop, Red Rock, Mississippi Girl, Stone, Success.

After two seasons' trial I have dropped the much-advertised John Baer, not because it is not a good tomato, but because it is simply another name for Chalk's Jewell, and is not as early by two weeks as Bonny Best.

I might have extended this list, but then you would have been in the same uncertainty as the catalogues placed you. What I have named I know are good. I always try some of the promising new things, but never depend on them for my crop until I have proved them for a season or two.

Reports received indicate that there were 14.8 per cent. more apples in cold storage on February 1, 1916, than on the corresponding date last year according to the U. S. Dept. of Agriculture.

The Farm Garden

E. D. GEE.

You may sing of the beauty of mountain and dale, Or the silvery streamlet and flowers of the vale, But the place most enticing, I verily believe, Is the place where old Satan met Adam and Eve.

You may talk of the value of silver and gold, Or the millionaire bankers with treasure untold, But no gold and no silver that's now on the earth Can compare with the garden for intrinsic worth.

You may talk of your prospects of fame and of wealth, Or the hopes that oft flatter the favorites of health, But the realization of hopes most sublime Is enjoyed by the matron at fruit canning time.

Now having your attention I'll try to relate How to make a good garden that's quite up-to-date. There is no theorizing in what I may say, For I know by experience I've found the right way.

Now the first great essential to a gardener's success Is a good underdrainage, for 'twill need more or less. I would choose for my garden an ideal plot, A little slope to the southward but otherwise flat.

Then good stable manure I'd spread on profuse, And a coat of red clover I'd never refuse; I would disk it and break it quite ten inches deep, Then another coat of manure will make it complete.

I would do this first breaking quite late in the fall, Then along about April I would pulverize all; Then to cultivate easy my rows must be straight, Or else it would never be quite up-to-date.

With an up-to-date garden I'm sure that it pays To plant it in hills to be tended both ways; Then I use a good scratcher, for I think it is best To kill all the weeds and give wife a rest.

And after a shower I find that I must Run through the patch both ways to break up the crust. Though such cultivation will take extra land, It is better by far than to do it by hand.

I, for one, don't depend on the signs in the moon, But on good cultivation and plenty of room. The good wife gets discouraged when weeds start up green, But where I go with my scratcher there's none to be seen.

Now I am assuming you farmers all know What to plant in your garden and how much to grow; If not, read this paper and there you will find Many men to instruct you, each one in his line.

Massey talks of the garden and Turner the hen, And McCue of the orchard, how to spray and when; There is Grantham on field crops, fertilizer and lime, Alfalfa and many other crops in their time.

Then there's good brother Terry, though now dead and gone, But we know that his spirit is still marching on; And there is a host who can truthfully tell How by following his teaching they were made sound and well.

You may value the friendship of youth or of age, And select for your comrades the noble and sage, But the friends that most cheer me on life's rugged road Are the ones that would help me to carry my load.

Then three cheers for the men that can truthfully state, "I've a very good garden and quite up-to-date." And three cheers for the men who've so blazed out the way That no studious farmer need now go astray.

Then subscribe for this paper and soon you'll all know Just how to make garden and what field crops to grow; And when we've all read it and there learned the facts, Then our co-operation will cap the climax.

And now before closing and saying good-bye, I will take my last chance to again testify, I am now seventy-seven and yet hearty and strong, And can thank T. B. Terry for my living so long.

And the profits in gardening I'm reaping today Are due to his writings that blazed out the way; And since I no longer must grope in the dark I am setting my sails for the century mark.

For if we the good laws of nature obey, There's no telling how long in this world we may stay; And if we manage our ship so it don't go awry, We may land safe in Heaven in the sweet by and by.

Now it seems to me fitting in closing my book To ask your forgiveness, I've made it so long; But I hope you may prosper as never before, With an up-to-date garden and good things galore.

Indiana.

The Practical Farmer

Live Stock and Dairy Section

Volume 112, No. 5

Philadelphia, Pa., March 1, 1916

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Spring, Summer and Fall Feed for the Dairy Herd

By H. H. DEAN

Author of "Canadian Dairying"

THE dairy farmer is essentially, or ought to be, a business farmer. A good business man lays plans at least a year ahead. So ought the dairy farmer. This is the slack time of year on the farm, although the man with a herd of dairy cows milking, will be kept quite busy morning, noon and night doing "chores." However, he will have some spare time during the day, and has the long winter evenings in which plans may be laid for next season, and the year after.

The common mistake made in spring is to turn the stock on the pasture before it gets a good start. The cows are hungry and the green grass tastes good after six months' rations consisting largely of dry feed. Consequently the fresh, tender grass is eaten too close, the hot sun and parching winds dry stalks, and roots of the grass plants robbed of their protection to such an extent that they never recover from the effects of the first hot spell, and hence the pasture is short for the remainder of the season.

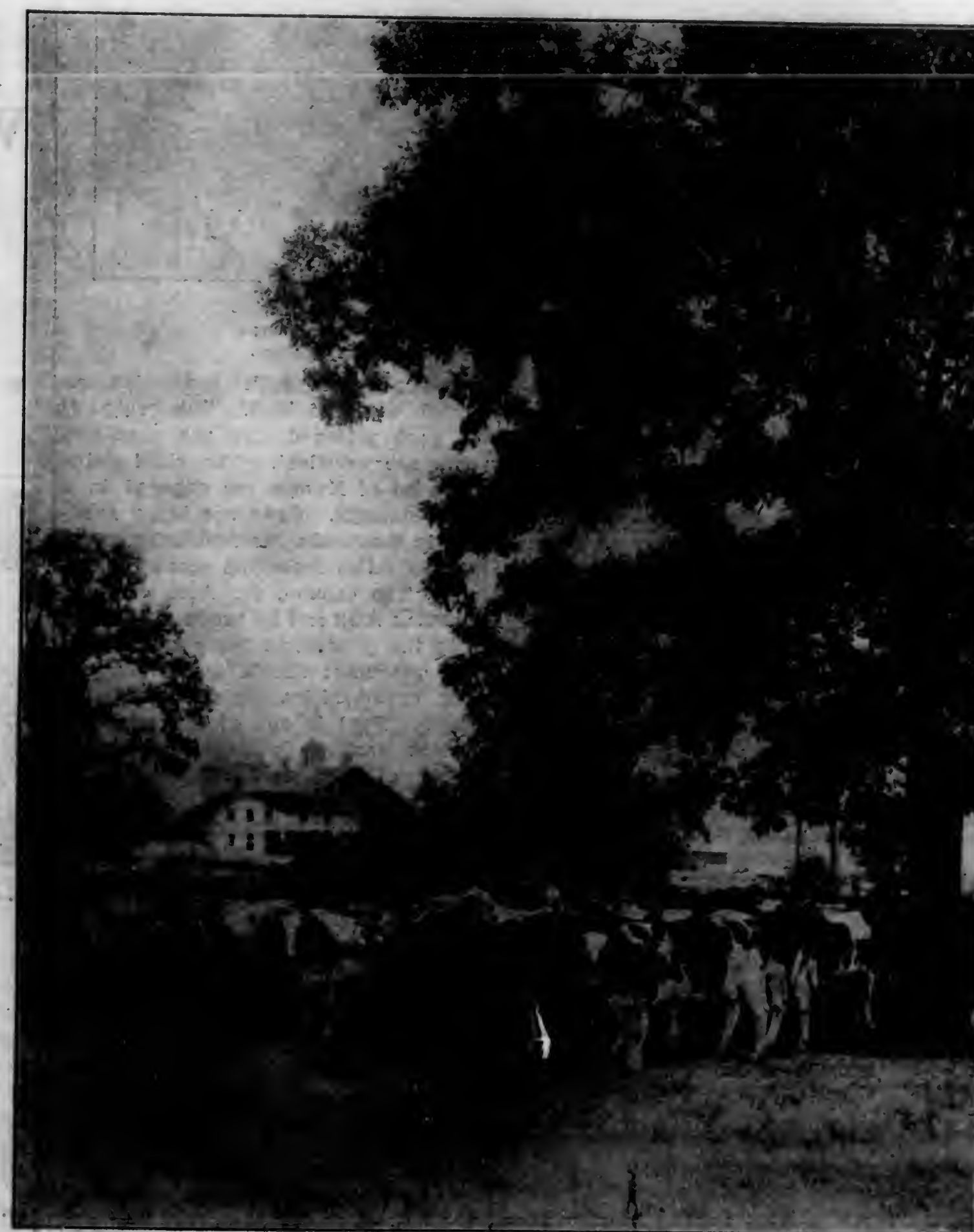
Instead of following the foregoing plan, we should recommend dairymen who are readers of The Practical Farmer to keep the cows and other stock in the yard or stable until the grass gets a good start, even though some extra feed may have to be purchased at pretty high prices. It will be money well spent and the returns later will more than pay the feed bill so incurred.

For the New England and North Atlantic States, and south-eastern Canada, cows should not be turned on the pasture fields earlier than the last week of May or first week in June, depending on the season and the growth of grass. To turn cows permanently on pasture fields before these dates is poor policy. Even then it is better to give a good feed of silage or hay and meal before turning out to grass in the morning, so that the edge of the appetite may be removed before the grass is tackled by hungry cows. This will easily save one-fourth of the pasture. So long as the cows will eat it, a good plan is to give some feed in the stable, where this is available.

PASTURE CROPS.

For the man likely to be short on pasture for 1916 grazing, we recommend, in a small way at first, the following mixture which has been tested at the Ontario Agricultural College with very satisfactory results: 1½ bushels of oats, 30 pounds Early Amber sugar cane and 7 pounds of red clover. This amount of seed is sown per acre—the oats and sugar cane seed are drilled with the ordinary grain drill and the clover is sown from the grass seeder attachment or separately, where the grain drill has no seeder. The mixture should be sown fairly early in the spring on rich, well prepared land, if possible. During the season of 1915, which in Ontario was an excellent season for all kinds of grass and

pasture crops, 36 acres of this crop maintained 75 head of live stock, nearly half of which were milch cows, for nearly four months, or at the rate of over two animals per acre for the summer season. Of course, we need to remember that it was an exceptionally favorable season for such a crop. We should not advise trying this crop on a large scale the first season, but if it proves satisfactory on a small plot it may be extended another year. There is little risk in the crop, as if the oats and sugar cane fall the clover will likely make a good seeding for next year.



A Cool and Shady Corner of the Summer Pasture

To the man who has some field not adapted for a general rotation, we should advise seeding it with a permanent pasture crop, sown with oats, barley, or oats and barley grain crop. A very good grass and clover mixture per acre is: Alfalfa 5 lbs.; alsike, and white or Dutch clover, each 2 lbs., orchard grass, 4 lbs., meadow fescue 4 lbs., tall oat grass 3 lbs., and 2 lbs. each of meadow foxtail and timothy seed, making a total of 24 lbs. of seed per acre. This may seem heavy and expensive seeding, but under proper conditions it will pay, but not in a short rotation. The

foregoing is for a permanent pasture crop.

For seeding with a short rotation try, per acre, 6 lbs. red clover, and 2 lbs. each of alfalfa, alsike, orchard grass, meadow fescue and timothy. Although grass and clover seeds are likely to be high in price during the spring of 1916, we cannot afford to sacrifice pasture crops, nor can we risk an old timothy pasture which may make fairly good feed for a month or six weeks then afterwards get as brown and dry as the roadside.

SOILING CROPS.

The cheapest and best soiling crop to supplement pasture is corn silage from last year's corn crop. If this is not available for 1916, we strongly advise planting an extra 2 or 3 acres of corn for feeding, say, 10 cows, in 1917. This is preferably placed in a summer silo which should not have an area of more than 3 to 5 square feet per cow. The small diameter silo is especially adapted for summer feeding, as the conditions at this time of year are very favorable for silage spoiling, hence two to three inches daily should be removed from the top of the silage. However, if a summer silo is not available, good results can be got by feeding from the bottom of a winter silo, where silage is left over from the previous winter's feeding.

After corn silage may come Canada peas and oats, or vetches and oats, or what they call in eastern Canada, the "O. P. V." crop for soiling, hay or silage. The first mixture mentioned should consist of about a bushel Canada peas and one and a half bushels of oats per acre. For ten cows one acre will be sufficient, sown with a grain drill at two or three intervals in spring, so that the crop will not all mature at the same time. About one-half bushel of vetch and one and a half bushels of oats sown at two or three intervals on rich land near the stable make a good soiling crop for cows. The "O. V. P." mixture is 2½ bushels of oats, ¾ bushel of peas and 1-3 bushel of vetch. From one to five acres of this may be sown for ten cows—the larger area to be used chiefly for hay or silage. Part of it may be fed as soiling or green crop.

The following leguminous soiling crops have been grown at the Ontario Agricultural College for a number of years, with the given average number of tons per acre of green crop in yield:

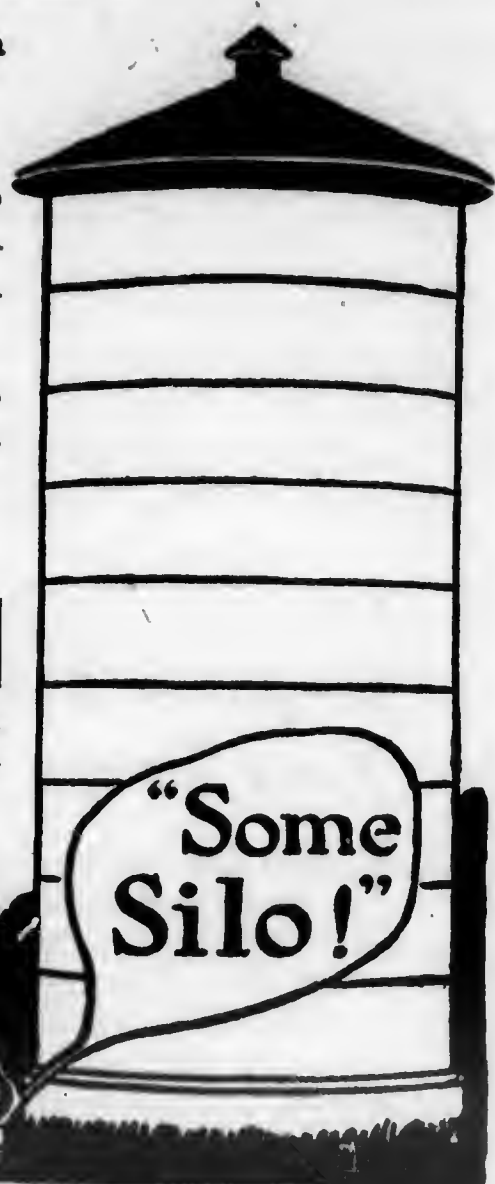
Hairy vetch	6.95
Grass peas	6.94
Early Yellow soy beans	6.49
Wonderful cowpeas	4.72
Alfalfa	19.94

In more southern districts the soy beans and cowpeas, would do better than the foregoing. Millets, rape, cow cabbage and kale are also used to some extent for soiling purposes, but rape,

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30 DAYS' FREE TRIAL GUARANTEED

You can have 30 days FREE trial and see for yourself how easily one of these splendid machines will earn its own cost and more before you pay. Try it along side of any separator you wish. Keep it if pleased. If not you can return it at our expense and we will refund your \$2 deposit and pay the freight charges both ways. You won't be out one penny. You take no risk. Postal brings Free Catalog Folder and direct from factory offer. Buy from the manufacturers and save money. Write TODAY.

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If you want to know more about the offerings before coming to the sale, write at once for our new house organ, which tells something about the cattle listed.

Don't wait until it is too late but write **at once**.

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Dutch and Drumhead. Some grow solid, while many grow too loose. The greater part will be as loose as a head of lettuce. Can you tell me the cause or give a remedy?"

The squash is Cucurbita melopepo, and the pumpkin is Cucurbita pepo. So they are very closely allied and will cross freely.

The Danish Ball Head cabbage makes a very hard head, not as broad as Drumhead, but very solid. It does not seem to be a success on limestone soil, but on other soils does very well. Probably if you use raw bone meal heavily it will tend to make the cabbages more solid. An excess of nitrogen tends to make loose heads. Cabbages demand plenty of phosphoric acid in the fertilizer. About 1000 pounds per acre of raw bone meal will make good cabbages.

What to Sow.—G. W. A. North Carolina, writes: "Now that we are getting the seedmen's catalogues, we who are inexperienced in garden matters, are puzzled by the long lists of varieties, and would be helped by your giving us a list of the best varieties, those that you have proved good."

Asparagus—Palmetto is best. Will tell further about growing it.

Beans, string—For earliest, Black Valentine; main crop, Burpee's Green Pod. Stringless—Bush limas, Fordhook; climbing limas, in the North any of the varieties of the large white lima, and in the South the small lima. For pole string beans Berger's Green Pod Stringless.

Cabbage—Early Wakefield, Copenhagen Market, Succession, Late Flat Dutch and Danish Ball Head.

Celery—Giant Pascal for your section, while North the Golden Self-Blanching will answer; but in your climate you cannot grow early celery, but must grow the winter crop.

Cucumbers—Davis Perfect for early and late.

Eggplant—Black Beauty.

Corn—Norfolk Market, Country Gentleman, Stowell's Evergreen and Kendall's Giant; north of Philadelphia the Golden Bantam will be found excellent, but is worthless South.

Horse Radish—Malliner Kren.

Muskmelons—Burrell's Eden Gem and Pollock.

Watermelons—McIver Sugar, Tom Watson.

Onions—Norfolk Queen, Southport Globe, white or yellow, Prizetaker and, for your section, Yellow Potato Onion planted in the fall.

Okra—Perkins' Mammoth.

Peas—Nonpareil, Sutton's Excelsior, Stratagem and Champion of England.

Potatoes, early—Irish Cobbler, White Skin Bliss, Early Ohio; late potatoes, Sir Walter Raleigh, Green Mountain, and Hoosier.

Radishes—White Tipped Red Turnip for early, and Celestial for fall.

Rhubarb—Linnaeus.

Salsify—Sandwich Island.

Spinach—Norfolk Savoy.

Tomatoes, early—Langdon Earliana.

Bonny Best; later, or main crop, Red Rock, Mississippi Girl, Stone, Success.

After two seasons' trial I have dropped the much advertised John Baer, not because it is not a good tomato, but because it is simply another name for Chalk's Jewell, and is not as early by two weeks as Bonny Best.

I might have extended this list, but then you would have been in the same uncertainty as the catalogues placed you. What I have named I know are good. I always try some of the promising new things, but never depend on them for my crop until I have proved them for a season or two.

Reports received indicate that there were 14.8 per cent. more apples in cold storage on February 1, 1916, than on the corresponding date last year according to the U. S. Dept. of Agriculture.

The Farm Garden

E. D. GRE.

You may sing of the beauty of mountain and dale
Or the silvery streamlet and flowers of the vale.
But the place most enticing, I verily believe,
Is the place where old Satan met Adam and Eve.

You may talk of the value of silver and gold,
Or the millionaire bankers with treasure untold.
But no gold and no silver that's now on the earth
Can compare with the garden for intrinsic worth.

You may talk of your prospects of fame and of wealth,
Or the hopes that oft flatter the favorites of health.
But the realization of hopes most sublime
Is enjoyed by the matron at fruit canning time.

Now having your attention I'll try to relate
How to make a good garden that's quite up-to-date.
There is no theorizing in what I may say,
For I know by experience I've found the right way.

Now the first great essential to a gardener's success
Is a good underdrainage, for 'twill need more or less.
I would choose for my garden an ideal plot,
A little slope to the southward but otherwise flat.

Then good stable manure I'd spread on profuse,
And a coat of red clover I'd never refuse;
I would disk it and break it quite ten inches deep.
Then another coat of manure will make it complete.

I would do this first breaking quite late in the fall,
Then along about April I would pulverize all;
Then to cultivate easy my rows must be straight,
Or else it would never be quite up-to-date.

With an up-to-date garden I'm sure that it pays
To plant it in hills to be tended both ways;
Then I use a good scratcher, for I think it is best
To kill all the weeds and give wife a rest.

And after a shower I find that I must
Run through the patch both ways to break up the crust.
Though such cultivation will take extra land,
It is better by far than to do it by hand.

I, for one, don't depend on the signs in the moon,
But on good cultivation and plenty of room.
The good wife gets discouraged when weeds start up green,
But where I go with my scratcher there's none to be seen.

Now I am assuming you farmers all know
What to plant in your garden and how much to grow;
If not, read this paper and there you will find
Many men to instruct you, each one in his line.

Massey talks of the garden and Turner the hen
And McCue of the orchard, how to spray and when;
There is Grantham on field crops, fertilizer and lime,
Alfalfa and many other crops in their time.

Then there's good brother Terry, though now dead and gone,
But we know that his spirit is still marching on;
And there is a host who can truthfully tell
How by following his teaching they were made sound and well.

You may value the friendship of youth or of age,
And select for your comrades the noble and sage,
But the friends that most cheer me on life's rugged road
Are the ones that would help me to carry my load.

Then three cheers for the men that can truthfully state,
"I've a very good garden and quite up-to-date."
And three cheers for the men who've so blazed out the way
That no sturdier farmer need now go astray.

Then subscribe for this paper and soon you'll all know
Just how to make garden and what field crops to grow;
And when we've all read it and there learned the facts,
Then our co-operation will cap the climax.

And now before closing and saying good-bye,
I will take my last chance to again testify,
I am now seventy-seven and yet hearty and strong,
And can thank T. B. Terry for my living so long.

And the profits in gardening I'm reaping today
Are due to his writings that blazed out the way;
And since no longer must grope in the dark
I am setting my sails for the century mark.

For if we the good laws of nature obey
There's no telling how long in this world we may stay;
And if we manage our ship so it don't go awry,
We may land safe in Heaven in the sweet by and by.

Now it seems to me fitting in closing my song,
To ask your forgiveness, I've made it so long;
But I hope you may prosper as never before,
With an up-to-date garden and good things galore.

Indiana.

The Practical Farmer

Live Stock and Dairy Section

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Spring, Summer and Fall Feed for the Dairy Herd

By H. H. DEAN

Author of "Canadian Dairying"

THE dairy farmer is essentially, or ought to be, a business farmer. A good business man lays plans at least a year ahead. So ought the dairy farmer. This is the slack time of year on the farm, although the man with a herd of dairy cows milking, will be kept quite busy morning, noon and night doing "chores." However, he will have some spare time during the day, and has the long winter evenings in which plans may be laid for next season, and the year after.

The common mistake made in spring is to turn the stock on the pasture before it gets a good start. The cows are hungry and the green grass tastes good after six months' rations consisting largely of dry feed. Consequently the fresh, tender grass is eaten too close, the hot sun and parching winds dry stalks, and roots of the grass plants robbed of their protection to such an extent that they never recover from the effects of the first hot spell, and hence the pasture is short for the remainder of the season.

Instead of following the foregoing plan, we should recommend dairymen who are readers of The Practical Farmer to keep the cows and other stock in the yard or stable until the grass gets a good start, even though some extra feed may have to be purchased at pretty high prices. It will be money well spent and the returns later will more than pay the feed bill so incurred.

For the New England and North Atlantic States, and southeastern Canada, cows should not be turned on the pasture fields earlier than the last week of May or first week in June, depending on the season and the growth of grass. To turn cows permanently on pasture fields before these dates is poor policy. Even then it is better to give a good feed of silage or hay and meal before turning out to grass in the morning, so that the edge of the appetite may be removed before the grass is tackled by hungry cows. This will easily save one-fourth of the pasture. So long as the cows will eat it, a good plan is to give some feed in the stable, where this is available.

PASTURE CROPS.

For the man likely to be short on pasture for 1916 grazing, we recommend, in a small way at first, the following mixture which has been tested at the Ontario Agricultural College with very satisfactory results: 1½ bushels of oats, 30 pounds Early Amber sugar cane and 7 pounds of red clover. This amount of seed is sown per acre—the oats and sugar cane seed are drilled with the ordinary grain drill and the clover is sown from the grass seeder attachment or separately, where the grain drill has no seeder. The mixture should be sown fairly early in the spring on rich, well prepared land, if possible. During the season of 1915, which in Ontario was an excellent season for all kinds of grass and

pasture crops, 36 acres of this crop maintained 75 head of live stock, nearly half of which were milch cows, for nearly four months, or at the rate of over two animals per acre for the summer season. Of course, we need to remember that it was an exceptionally favorable season for such a crop. We should not advise trying this crop on a large scale the first season, but if it proves satisfactory on a small plot it may be extended another year. There is little risk in the crop, as if the oats and sugar cane fail the clover will likely make a good seeding for next year.

foregoing is for a permanent pasture crop.

For seeding with a short rotation try, per acre, 6 lbs. red clover, and 2 lbs. each of alfalfa, alsike, orchard grass, meadow fescue and timothy. Although grass and clover seeds are likely to be high in price during the spring of 1916, we cannot afford to sacrifice pasture crops, nor can we risk an old timothy pasture which may make fairly good feed for a month or six weeks then afterwards get as brown and dry as the roadside.

SOILING CROPS.

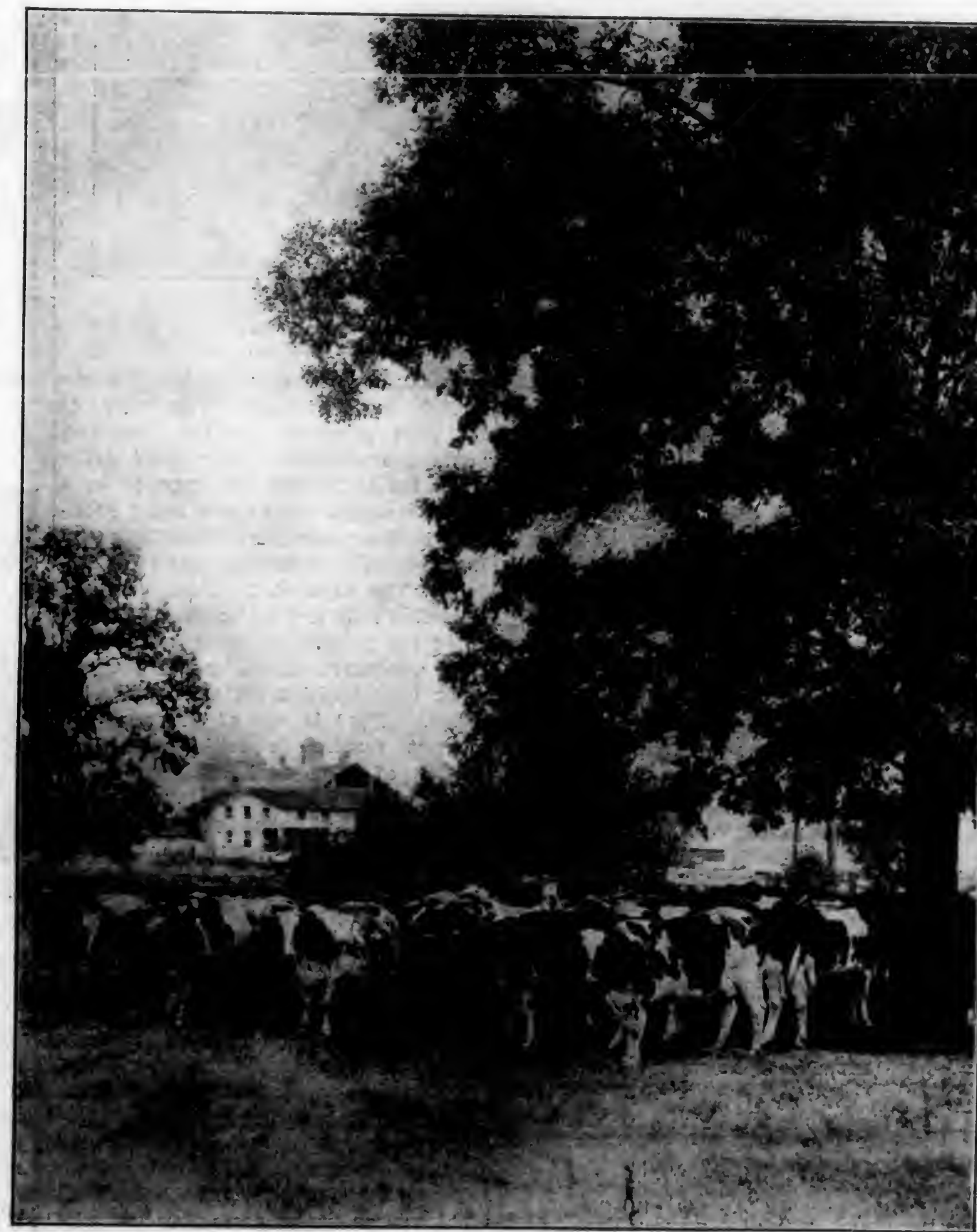
The cheapest and best soiling crop to supplement pasture is corn silage from last year's corn crop. If this is not available for 1916, we strongly advise planting an extra 2 or 3 acres of corn for feeding, say, 10 cows, in 1917. This is preferably placed in a summer silo which should not have an area of more than 3 to 5 square feet per cow. The small diameter silo is especially adapted for summer feeding, as the conditions at this time of year are very favorable for silage spoiling, hence two to three inches daily should be removed from the top of the silage. However, if a summer silo is not available, good results can be got by feeding from the bottom of a winter silo, where silage is left over from the previous winter's feeding.

After corn silage may come Canada peas and oats, or vetches and oats, or what they call in eastern Canada, the "O. P. V." crop for soiling, hay or silage. The first mixture mentioned should consist of about a bushel Canada peas and one and a half bushels of oats per acre. For ten cows one acre will be sufficient, sown with a grain drill at two or three intervals in spring, so that the crop will not all mature at the same time. About one-half bushel of vetch and one and a half bushels of oats sown at two or three intervals on rich land near the stable make a good soiling crop for cows. The "O. V. P." mixture is 2½ bushels of oats, ¾ bushel of peas and 1-3 bushel of vetch. From one to five acres of this may be sown for ten cows—the larger area to be used chiefly for hay or silage. Part of it may be fed as soiling or green crop.

The following leguminous soiling crops have been grown at the Ontario Agricultural College for a number of years, with the given average number of tons per acre of green crop in yield:

Hairy vetch	6.95
Grass peas	6.94
Early Yellow soy beans	6.49
Wonderful cowpeas	4.72
Alfalfa	19.94

In more southern districts the soy beans and cowpeas, would do better than the foregoing. Millets, rape, cow cabbage and kale are also used to some extent for soiling purposes, but rape.



A Cool and Shady Corner of the Summer Pasture

To the man who has some field not adapted for a general rotation, we should advise seeding it with a permanent pasture crop, sown with oats, barley, or oats and barley grain crop. A very good grass and clover mixture per acre is: Alfalfa 5 lbs.; alsike, and white or Dutch clover, each 2 lbs., orchard grass, 4 lbs., meadow fescue 4 lbs., tall oat grass 3 lbs., and 2 lbs. each of meadow foxtail and timothy seed, making a total of 24 lbs. of seed per acre. This may seem heavy and expensive seeding, but under proper conditions it will pay, but not in a short rotation. The



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cabbage and all similar crops are rather dangerous to give to cows milking, because of the taint imparted to the milk by these foods.

On land where alfalfa will grow satisfactorily it is an excellent fodder or hay crop for dairymen to grow, but the risks are so great on most farms that a man should put in only a small piece at first on well drained, limed soil, after inoculating the seed or the ground with alfalfa bacteria. If he finds the crop will grow well then he may enlarge the acreage, but to sow a large area of alfalfa or sweet clover, or any other comparatively new crop is not wise, as a dairyman cannot afford the risk. He has the cows and must feed them. Cows without plenty of feed are a losing proposition, hence a man who depends largely upon revenue from cows to pay expenses and give profit, should not spend too much time, effort or capital on risky crops. Better stick to those we know are reasonably good



Careless Crop Management

The Palatability and Feeding Value of Corn Products are Greatly Lessened by Exposure to the Weather.

and sure, than run too much after new-fangled crops recommended by an experimenter or seed house, who has failed to consider the wide diversity of conditions on various farms of any dairy section. Because of this fact every man needs to be an experimenter on his own farm, to a limited extent, rather than depend altogether on the advice of others.

CORN THE BEST SOILING AND SILAGE CROP.

There is no plant at present known to dairymen in northern districts which can compare with corn as an all around soiling and silage crop. It will produce more feed to the acre on a greater variety of soils, and over a wider range of climate than will any other crop which can be grown at so little expense and risk.

Quite a warm discussion has taken place recently in the Province of Ontario with reference to the relative merits of thin and thick seeding of corn. It was thought the matter had been settled in favor of thin seeding, and planting in hills, rather than drilling in rows. However, recent private tests have caused the public experimenters to tackle the problem anew. Farming is one of those subjects that are continually shifting the basis of theory and practice. It is a never-ending matter of investigation.

The moderately thick-seed corn growers for soiling and silage purposes claim that a greater tonnage per acre is got by seeding three-quarters to one bushel of seed per acre sown in drills; that such corn will produce more digestible material per acre; and that there will be less waste by undigested corn passing through the animal. In the West it is customary to have hogs follow cattle to utilize this waste, but this is not a common practice among eastern dairy-

men—at least not in Canada.

The thick-seeders are emphasizing the importance of using an early-maturing variety for the locality and the need of having the corn stalks nearly matured before cutting. They claim there will be less ears on such corn, but that the feeding nutrients are in the stalks and leaves, in more digestible form for soiling and silage than if grown thin and having the corn plant store its nutriment in the ear. This point will be worth looking into for 1916 by growers of corn for feeding purposes as silage or silage.

SUMMARY.

Thus by treating the pasture crop of 1916 in a rational manner; by providing better pasture for 1917 through using a greater variety of grasses and clovers and thicker seeding, by growing soiling and silage crops extra for 1916 and 1917, the dairymen may reasonably hope to maintain and to in-



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Watching the Horse's Teeth

By J. H. REED, V. S.

While under normal conditions the teeth of the horse require no special attention until he has reached about middle age, it is good practice to examine the mouth periodically to observe whether conditions are normal. The incisor or cutting teeth in a full mouth are six in each jaw. The pair in the center are called central incisors, one on each side of these the lateral incisors; and one on each side of these the corner incisors. The molars in a full mouth are six in each row, numbered from the front backwards, as 1st, 2nd, 3rd, 4th, 5th, 6th.

At birth a foal sometimes has the central temporary incisors in each jaw. If not present at birth they appear at about 9 days; the lateral appear at about 9 weeks and the corner ones at about 9 months, when the foal is said to have a full mouth of temporary incisors. There is no change in these, except increase in size, until the colt is between 2½ and 3 years old, during which period the central incisors in each jaw are shed and replaced by permanent teeth. Between 3½ and 4 years a like change takes place with the lateral incisors, and between 4½ and 5 years the corner teeth are replaced by permanent ones. Hence at five years of age he should have a full mouth of permanent incisors. This process of dentition usually takes place in a normal manner, without extraneous influence, but in some cases the roots of the temporary teeth do not become fully absorbed and as a consequence there is a danger of their persistence interfering with the growth of the permanent teeth and causing them to grow in an abnormal direction. Hence at the ages mentioned it is wise to look at the teeth occasionally and if such be the case the temporary tooth at fault should be extracted.

At birth a foal has 12 temporary molar or grinding teeth—the 1st, 2nd and 3rd in each row, and he never gets any more. Between 6 months and a year old the first permanent molars appear, being the 4th in each row. Between 1½ and 2 years the next appear, being the 5th in each row. Between 2½

and 3 years Nos. 2 and 3 temporary molars have been replaced by permanent ones, and between 3½ and 4 years of age No. 1 temporary in each row has been replaced by a permanent one and No. 6 has appeared. Hence a horse has a full mouth of permanent molars at 4 years of age. It is quite common to notice a colt between 2½ and 3 years, or between 3½ and 4 years, to become unthrifty and unable to masticate properly. An examination of the mouth often reveals the fact that the crowns of the temporary molars that should be shed at these ages, are not shed, but are still attached to the crowns of the permanent teeth that have appeared. This raises the level of the teeth involved, above or below their fellows, according to whether the abnormal condition exists in the upper or lower jaw. These unshed crowns are easily removed by the use of a pair of forceps, or pried off by the use of a screw driver and then the animal will be able to masticate properly. This teaches us that it is always wise to examine the molars of a colt that becomes unthrifty at about the ages mentioned. While the above processes of dentition are reasonably regular at the ages stated, we find that the rule is not absolute. There are abnormal cases, cases in which dentition may vary a few months or even a year either way. Even in quite young animals cases in which the molar teeth require dressing are not uncommon. Sharp points appear on the outer edge of the upper molars and the inner edges of the lower ones; points that scarify the cheeks and tongue and interfere with mastication. This condition is very common in horses of middle age or older, hence it is good practice to examine the mouth at least once yearly; and if this or other abnormal conditions exist it should be relieved by dressing the teeth. In some cases it is necessary to shear a portion of a tooth.

After a horse is nine years old it is generally well spent money to have his teeth dressed yearly by a veterinarian, keeping them in good condition.

Concrete Floors for Hog Feeding

By W. A. GRAHAM

At the outset I am going to confess that for years I fed hogs, big and little, their corn or other grain in muddy, dusty and very unsanitary lots and pens. The main reason I write this is to advise those still feeding that way to abandon the practice. It is, and can be, only a money losing proposition to feed hogs, especially during the winter, in any other way than to place the grain on cement feeding floors. Of course, feeding floors can be made of lumber, but rats cut such floors full of holes, and the lumber soon rots or becomes disease breeding by decay.

A concrete floor is the cheapest, and if one is well made it is calculated to last almost a lifetime. Rats cannot burrow under, or gnaw through, and if regularly swept or flushed with water such a floor is strictly sanitary, and this is a very important consideration to all hog growers and feeders. The saving of feed alone on such a floor soon pays for its construction. Then hogs fed in mud, filth, or where there is a deep dust, necessarily eat so much of such foul and unhealthy material that the grain they consume does not do them the good it should. To be honest, and I base my conclusion on actual practice, I would as soon have one bushel of corn fed on a good clean floor, as two bushels thrown

in mud and filth. Yet all through the great Central West, or really, over the entire American corn belt, untold numbers of otherwise good farmers provide no kind of clean floors upon which their hogs can eat.

Because hogs will try to eat, regardless of mud or filth, multitudes of farmers in the past, and about as many yet, seem to think such conditions of importance in injury to their feeding during the winter season. The fact that I care nothing for a regular feeding floor through all the warm season of the year, when the hogs are running on clover or other good pasture, does not argue one bit against the possession of a good concrete feeding floor. It is about as common now with the average farmers to feed as many hogs during autumn and winter as during the summer. Consequently, all should provide feeding floors for health and thrift, for economy in grain, and because this is the only way of making hog growing and fattening pleasant as well as profitable.

My experience warrants me in fully recommending the construction of concrete feeding floors to every farmer who desires to make the most from his grain or other feeds by growing and fattening hogs. The initial expense is far more than offset by the eventual saving.

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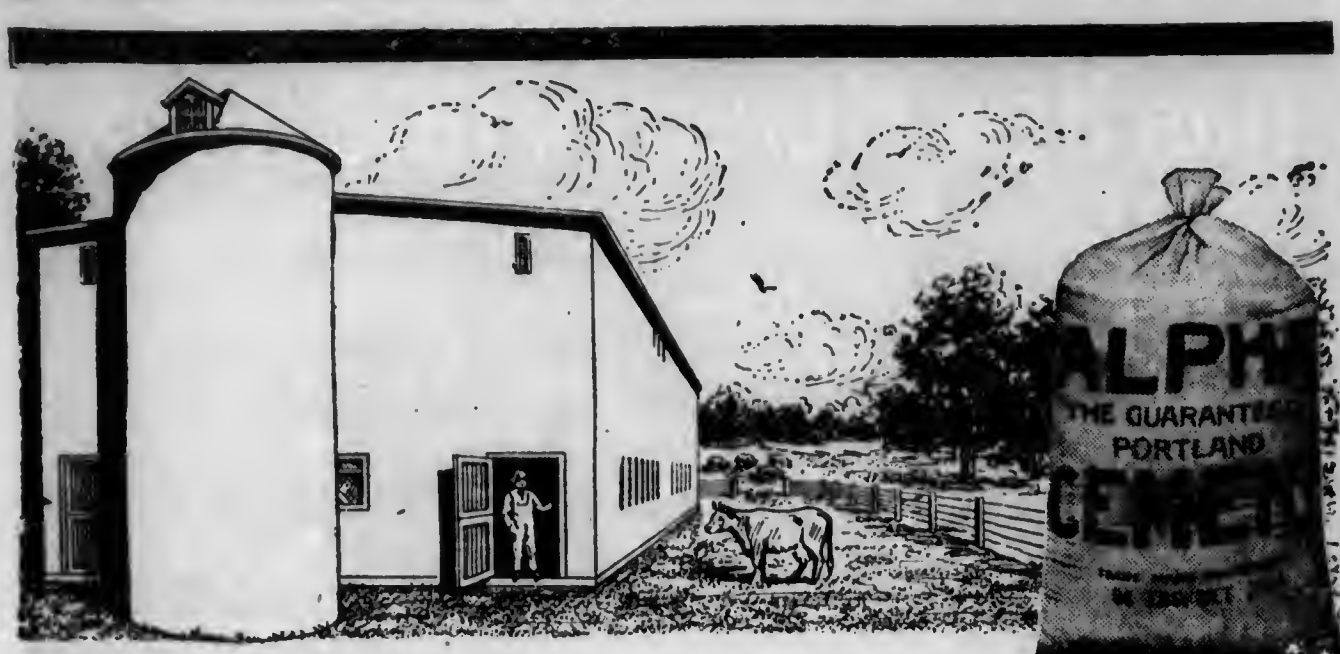
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Success with Shropshires

MORTON A. HAYNES.

Some twenty or more years ago the writer's father started a flock of sheep from two cosset ewe lambs, one received as a gift and the other at a cost of 50 cents. After the number had increased to five, he determined to fool away a little on sheep, as he expressed it. Having carefully considered the matter he purchased a registered Shropshire ram, and one year later a registered ewe, the best lamb from a well-bred stock. Since this time the stock has steadily improved until he now has about 25 fine pure-breds. Breeders have been introduced from many of the best flocks in several states, and a number disposed of each year for breeding purposes. After a time he became a member of the American Shropshire Registry Association, thereby reducing the cost of fees. As most of his time is given up to other duties, he has never exhibited or advertised except in a very limited way, and has always kept only the best individuals for breeding purposes. The rams he has offered for sale at about two-thirds the price he has had to pay for similar stock. Many of the farmers in this and nearby towns have taken advantage of it and today few of the flocks fail to show some of this blood.

The Shropshire is a farmer's sheep. It is claimed that there are more of this breed in the country than all other breeds combined. They are a low, fleshy built animal, quiet, peaceable, hardy, good milkers and early maturing, making it possible to have lambs come after cold weather is past in the spring, and be in good marketable condition before winter. On the other hand, they are good wool producers, being covered completely with a fine, thick fleece of fair length, frequently shearing over ten pounds.

Here are a few things we have learned about sheep:

1. They are great weed destroyers and especially useful in cleaning out willow sprouts.
2. We believe it pays to dispose of all ewes before they become too old. Eight years is about the age limit.
3. The two most critical periods in the life of a sheep are at lambing and shearing time. One bad storm may ruin a good flock and take away the year's profits.
4. It pays best to feed good, well cured, fine early cut hay, and to give the ewes a little grain, and perhaps a few roots, from a month before lambs are due until pasture feed becomes good.
5. Persistent dipping will clean out ticks. We have not seen one in several years.
6. Scrubs should be disposed of at some price. If they are not fit for market their offspring would not be.
7. The only sure remedy for sheep-killing dogs is administered with a fire-arm and should be given promptly upon first signs of attack.

Vermont.

Digestive Diseases of the Ox

ENTERITIS.

Enteritis or inflammation of the bowels, is not a common disease in the ox, but is sometimes seen. Either the mucous or muscular coat of the intestines may be primarily involved, but the inflammation usually extends and tends to involve all three coats. This disease is more often seen in working cattle; adults in high condition are more liable. It is due to exposure to rough, cold weather, especially if the animal has been subjected to severe exercise of any nature and is in a state of perspiration.

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tion. It may be caused by drinking freely of cold water when heated; or indigestion of irritant substances. It also results from extension of inflammation of other organs, and may result as a sequel to other diseases of intestines.

SYMPTOMS.—There are general symptoms of disorder, with pain on pressure over the loins or on the abdomen, frequent passage of small quantities of dry feces, and in some cases slight abdominal distension or bloating. Acute febrile disturbance soon takes place, the temperature rises a few degrees and the pulse becomes full and frequent. The patient usually stands obstinately in one place, with muzzle protruded and the hind limbs seeming inclined to give way. Thirst is usually excessive, but all inclination for food is lost. The patient groans, grinds his teeth, looks around to the right flank and flinches if pressure be made upon the abdomen. The pain is continuous, which, with the acute fever, serves to distinguish the disease from colicky disorders. In fatal cases, shortly before death, the patient usually becomes unconscious and falls, moaning continuously. The passage of feces becomes suppressed, and a small stream of liquid excrement is often forced through the hardened mass, by which action the rectum becomes distended, and the feces that are voided have an exceedingly fetid and putrid odor. Death is often preceded by cessation of pain, but the patient has an anxious expression, the extremities are extremely cold, the pulse very frequent and weak, often imperceptible and the general temperature rapidly falls. These symptoms indicate the occurrence of gangrene. While in the early stages the pulse is strong and frequent, it soon loses its strength, but increases in frequency and the rectum, when examined with the hand, is evidently much increased in temperature. The torpidity of the bowels is due to cessation of peristaltic action, as the inflamed muscular coat soon loses its power of contraction.

POST MORTEM APPEARANCES.—Soon after death the intestines become inflated with gas. The outer covering is congested, inflamed or gangrenous over the parts especially involved. The abdominal cavity contains a considerable quantity of serum. Both small and large intestines are usually involved. The intestinal walls are thickened and vary in color in different parts, from the redness of simple congestion to the greenish, dark condition of gangrene. There is much effusion and blood extravasation between the muscular fibers and the contents of the bowels are mainly blood and mucus.

TREATMENT.—The patient must be made as comfortable as possible and carefully nursed. Rugs or blankets wrung out of hot water should be kept to the abdomen. The contents of the rectum should be removed by hand, after which warm soapy water should be injected. Rectal injections should be repeated every 6 to 8 hours. Purgatives or laxatives should be avoided, as the muscular coats of the intestines have become inactive, hence medicines of this nature will simply irritate, not being able to cause any action of the bowels. In the early stages, when the pulse is full, strong and frequent, the abstraction of 6 to 8 quarts of blood from the jugular vein is good practice, but blood-letting cannot be tolerated after the pulse begins to lose force. Large doses of opium should be administered, as 2 to 3 drams of powdered opium in a pint of cold water as a drench every two or three hours. The thirst should be relieved by giving water with a little saltpeter dissolved in it, in small quantities and often.



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EACH year some 40,000 farmers, who have bought at one time or another, "cheap" cream separators, discard the inferior, cream wasting machines and replace them with clean skimming De Laval.

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No one ever saved money using a "cheap" cream wasting separator or an old or half worn-out machine. No one ever got back the money spent for such a machine by continuing to use it. Those who bought "cheap" machines and got out of the difficulty best are the ones who quickly discovered their mistake, discarded the inferior machines and put in real cream separators—De Laval.

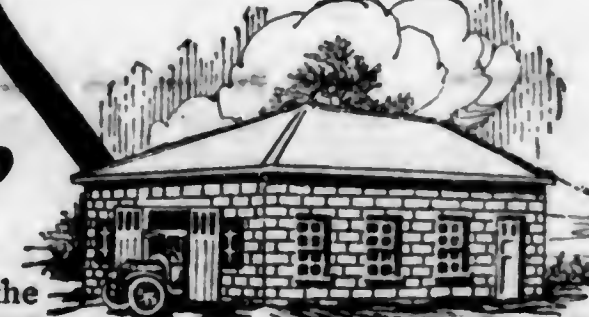
There are nearly 2,000,000 farmers who have bought De Laval, and every one of these had just as many opportunities to buy "cheap" separators as any one else. They did not do it and are now money ahead. They have avoided paying the high cost of experience, and their De Laval have paid for themselves many times over. It always pays to buy a separator of proved, known superiority.

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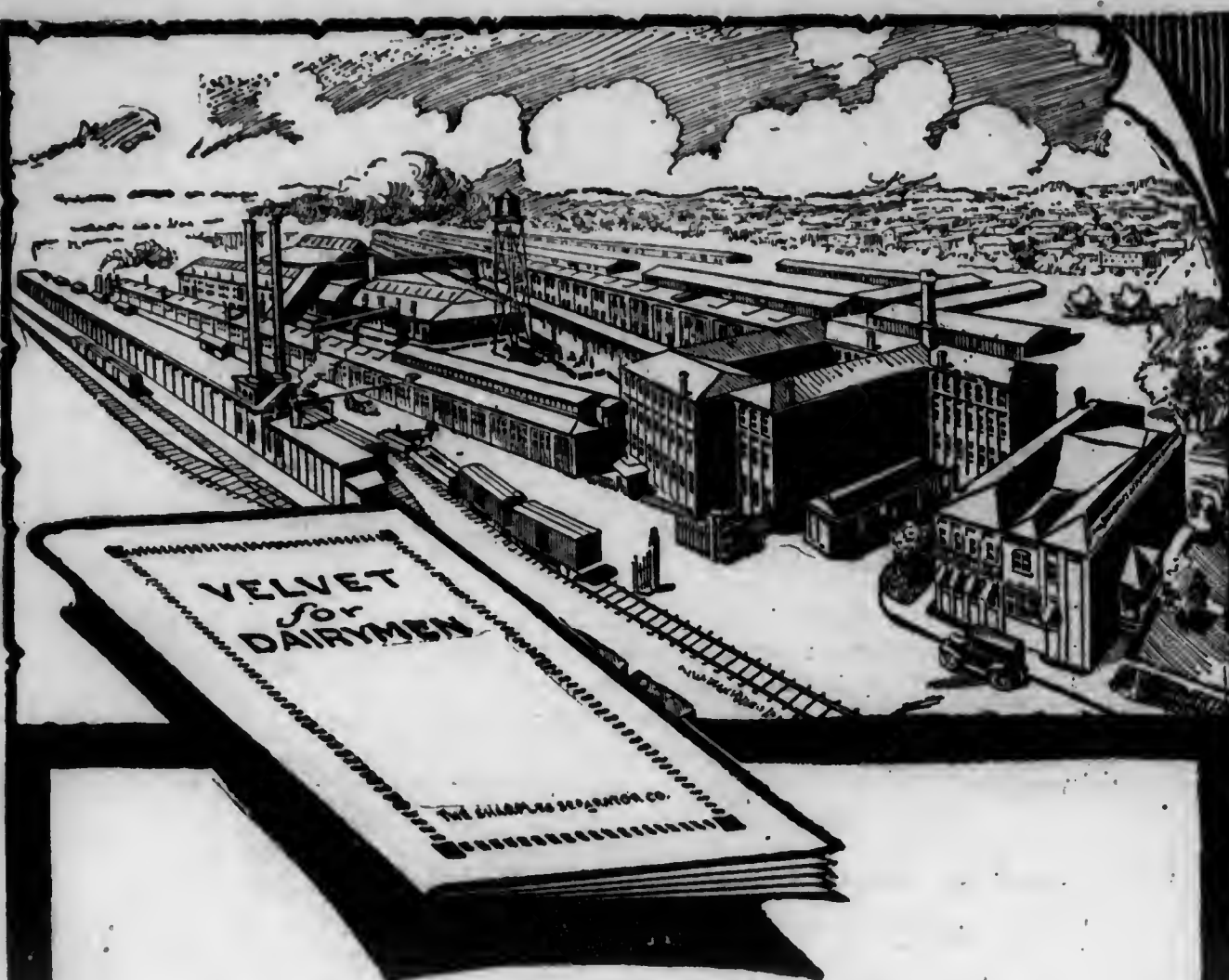
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One Dairyman's Road to Success

By H. F. HELLER

The old receipt for rabbit pie began, "Catch your hare." To begin with the calf, it must have the right start some months before it sees daylight. It must have the right sire and dam. Good cows come only from good calves. I became interested in dairying as soon as I was old enough to understand the details and take hold of the business. From the first I was determined to have a herd of pure-bred Holstein cattle. I bought three calves, two heifers and a bull, at a cost of \$125. This was the foundation of my present herd. I have stuck to the Holsteins all these years, because I believe they are the best all-around dairy cows for a farm.

Don't get in a hurry to breed the heifer; let her grow into a big, sturdy animal first; being in heat a few times will not hurt her. Don't make her carry a calf before she has time to grow her

soon as they are about two weeks old. The best grain for feeding calves is mixed as follows: 100 lbs. ground oats, 100 lbs. oil meal, 100 lbs. wheat mixed feed, 100 lbs. molasses feed, 100 lbs. of hominy. This ration is greatly relished by the calves and is a good developer. As soon as the calves will eat it, they are given timothy or clover and alfalfa hay. A little salt is given every day and care is taken not to overfeed at any time. My cows are large and develop into extra large cows. By saving the calves from the best cows it will not be long before a good business herd can be worked up. My cattle are kept in roomy, well lighted and ventilated basement barns; all are equipped with concrete floors. The gutters are cleaned daily and the cows kept well bedded with oat straw and sawdust or shavings. All cows' bellies, flanks and tails are



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She is a senior four year old registered Holstein, and not only has she broken all world's records in her class, but also for all classes and breeds. She produced 7 and 29 100 pounds of butter in one day, 44 and 42 100 pounds of butter in seven days and 190 pounds of butter in thirty days. She milked 721 pounds of milk in seven days and 200 pounds of milk in thirty days. She is owned by Pine Grove Farms, Elma Center, N. Y.

own frame and put some fat on it. Keep her in good condition and watch out for lice.

Teach her that you are her friend—an ounce of curries is worth a ton of clubs. Take off the horns, they are always dangerous and they cost money to maintain.

When you breed her, don't take a chance; be on the job yourself. The dairy farm is the one place on earth it don't pay to run any unnecessary risk. Watch her while she is carrying her calf; look out for her feed; see that she gets enough and of the right kind.

I prefer to have the largest number of my cows freshen in the fall. I leave the calves with their mothers until they are dry, when the calf is taken away and taught to drink out of a pail. During the first few days I feed the calf three times a day, giving not more than 10 pounds (5 quarts) of new milk per day. I feed 4 pounds in the morning, 2 at noon and 4 at night.

Scours are more often caused by cold milk than by dirt. Every doctor will tell you to warm the baby's milk. Let us use a little gumption in dealing with the cow's baby. Fill him up, warm him up and keep him out in the fresh air and sunshine whenever it is practicable. Don't let the calves and cows run together in pasture. Keep the calves in a lot, even if a small one, and they will do better because of the liberty from nose guards and other ornaments.

The feeding of dry grain is begun as

clipped, which makes it a very easy matter to keep them clean. Clean cows and clean stables, I find, are necessary for the best results.

I feed silage. I have never seen a dairyman who has tried the feeding of silage who would think of keeping cows without it. The same may be said of the farmer who raises beef cattle and raises his own feed, and if he does not raise his own feed he cannot very well afford to feed them except in very unusual seasons. In the first place, you can get much more stuff from a given amount of land in corn for silage than in any other way. On good land in a favorable season you can get, at very little expense, from 8 to 20 tons of the very best feed per acre, planted in corn and peas, or corn alone. The silo is the means of saving every pound of this vast amount of feed in the best possible manner. My cows are fed their grain and milked at about 5 A. M. After the milking is finished they are given their allowance of hay. At noon they are fed hay, either alfalfa, oat or clover. At 5 P. M. they are fed their grain rations again, milked and then fed their feed of silage. The grain ration consists of the following mixed together: 200 lbs. molasses feed, 100 lbs. oil meal, 100 lbs. hominy and 100 lbs. gluten. I feed from 8 to 15 lbs. to each cow per day, according to the size and capacity of the animal when she is milking. When the cows are dry about half the amount is given.

My barns are equipped with water buckets before each cow. This I find is a very essential thing in getting a good flow of milk. I find that when the cows are turned out of doors to water they will not get enough, to say nothing about the chill given by the cold water and air. Today they do not drink enough, tomorrow they over-drink. One extreme is as bad as the other. On all pleasant days the cows are turned out of door for exercise. The right cattle stock means dairy dollars; dairy dollars mean economical producers, true dairy type, capacity and gentle cows. Cross cows are usually hungry. Kicking cows are always expensive—in cash when the bucket flies, in nerve energy at all times. Big, healthy, contented cows that come when you call them, walk into their places and begin to eat, without fussing among themselves, or without being suspicious of their keepers, those are the dairy dollar kind, scarce to find, hard to get, and valued above rubies when once obtained. Dairy dollars mean ensilage and bran, oil meal and cotton seed, corn meal, cut fodder and hay converted into milk, the milk run through a separator which takes out all the fat, the skimmed milk fed to calves, pigs and chickens, while the cream goes to the producer of fancy butter. Dairy dollars mean that the farmer is a specialist in the production of one staple article of food; that this article is produced at a profit and sold without impoverishing his soil. The milk sheet, the scales and the Babcock tester are important, but more important than these is the fact that he must have the Holstein cow.

Pennsylvania.

Preventing Mottled Butter

Mottled butter is frequently found on the market at this time of the year, and even though it may be of very good flavor, it is strongly discriminated against by the purchaser. As this defect is one of workmanship, it can be overcome by the application of proper methods on the part of the butter maker.

Mottles are caused primarily by uneven distribution of salt in the butter. This may be produced by insufficient working of the butter or by churning, washing and working it at a very low temperature, or washing or working it at a temperature several degrees higher or lower than the churning temperature. When the quantity of butter made in one churning is much less than usual, it is necessary to work it a greater number of revolutions of the churn than usual in order to produce the same results on the butter.

Extremely low temperatures of churning, washing and working should be avoided, because they produce so firm a butter that it is only with great difficulty that the salt can be worked uniformly into it. High temperatures of churning, washing and working must be avoided to prevent an abnormal loss of fat in the butter milk and also the making of a greasy, leaky butter.

Great variations in temperature during the manufacturing process should always be avoided. Under normal conditions the temperature of the wash water should be the same as, or within 2 degrees of, that of the butter milk.

When the churn room is so cold that the butter becomes chilled before working is completed, mottled butter is frequently the result. To prevent this it is preferable to increase the amount of working rather than to raise the temperature of the wash water.

Mottled butter, then, may be prevented by using methods that will insure a uniform distribution of salt.

Queries Answered

Fardel Bound.—H. T., New Jersey, writes: "Calf nine months old refused to eat and was constipated. I gave it 1 1/2 pounds of Epsom salts in two doses. Next morning it had passed nothing and was grunting. I gave it linseed oil, aconite and turpentine. It died soon afterward. A post mortem revealed the contents of the small stomach with leaves in it, very dry and hard."

This was impaction of the third stomach, called fardel bound. It is often fatal. Treatment consists in giving repeated doses of purgative medicine. In this case the dose should have been about 1/2 pound of Epsom salts and 2 drams of ginger, to be repeated in 24 hours if necessary. In addition about 25 grains of nux vomica should have been given three times daily. Your treatment was fair except for the aconite. Aconite is a very active heart sedative. It should never be given except by a veterinarian. Your calf was weak, and no doubt the heart's action weak, hence the aconite hastened, and probably caused death, which under proper treatment might have been prevented.

Blackleg.—R. S. T., Delaware, writes: "I have lost three calves 8 to 10 months old. The first one was found dead one morning. The second was noticed going lame on foreleg, which was swollen about the shoulder. It gradually got worse and died in a few hours. The third showed similar symptoms, but was lame on hind leg. When skinned the flesh of the swollen parts was very dark and seemed to contain air or gas."

This was blackleg, for which no satisfactory treatment has been discovered. It is usually caused by a fungus on grass or fodder grown on low lying ground. Prevention consists in keeping young cattle away from infected grass or fodder. Cattle can be rendered immune with reasonable certainty by inoculating with anti-blackleg preparation, which, with instructions and necessary instruments, can be procured from manufacturing chemists.

Lame Mare.—T. R. K., New York, writes: "Brood mare has been lame for a long time. When stood with high heel and low toe calking with the foot resting just on the outside of the shoe she is not so bad. I use her only for very slow work. The lameness is more pronounced when she is driven on the road."

The symptoms indicate a very weak and flat sole, for which practically nothing can be done except shoeing so as to relieve the sole of pressure as much as possible. We would advise bar shoes giving good frog pressure. The bearing surface of the shoes should be beveled from above downward and inward, leaving only sufficient level surface on the outer edge of the upper surface for the lower border of the wall to rest upon. It is hard to see why she should go better with high heel calkins, but as such is the case, of course, it is wise to wear them.

Crippled Pigs.—G. A. R., Pennsylvania, writes: "I have a litter of pigs about 12 weeks old. I have kept them in a small, comfortable pen and fed well ever since they were weaned, as I have been anxious to get them ready for market as soon as possible. They were doing splendidly until about a week ago, when I noticed one of them had difficulty in rising and walking and it appeared to cause him pain. He has gradually become worse and now cannot rise, nor stand when lifted. I notice some of the others are beginning to show similar symptoms."

This crippling is due to too high feeding and want of exercise. Pigs that are highly fed require regular exercise. Purge each of them with 1 ounce of Epsom salts and follow up with 3 grains of nux vomica three times daily. Feed on meal, middlings and raw roots. See that those who can move get daily exercise, and as soon as the disabled one can walk, see that he also gets exercise.

Contagious Abortion in Cattle.—T. J., Missouri, writes: "Can you give me a remedy for contagious abortion in cows?"

Give him rest in a comfortable box stall. Get a lotion made of 2 ounces of laudanum, 4 drams acetate of lead and 12 ounces of water. Bathe the fetlock joint well three or four times



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HORTICULTURAL

Edited by C. A. McCUE

Insecticides for Chewing Insects

The most popular insecticide for chewing insects that is used today is arsenate of lead. This poison first came into use in Massachusetts in fighting the gypsy moth. It was soon placed upon the market under the name Disparene, but this trade name was soon dropped and the poison is now sold everywhere under its own name, arsenate of lead. A great deal of arsenate of lead first used for spraying purposes was home-made, by mixing solutions of arsenate of soda and sugar of lead together. This method was slow and cumbersome and the poison did not gain its greatest popularity until the chemical companies that dealt in spray materials began to manufacture the arsenate in a paste form and place it upon the market in a convenient form for use. Arsenate of lead then gained rapidly in popularity and about five years ago became the principal poison spray used by orchardists. However, it still had two drawbacks. It took time to dissolve the paste in water, and when the paste had once dried out in a partially used package it was hard to get it back into paste form and its suspension qualities were greatly impaired. Two or three years ago the manufacturers succeeded in making a powdered form of the arsenate of lead that is much more convenient to use. The powdered form is rapidly displacing the paste form. Any orchardist who has once given the powdered form a thorough trial is loath to go back to the paste.

According to the national insecticide act of 1910, arsenate of lead paste should not contain over 50 per cent. moisture, and shall not contain less than 12½ per cent. of arsenic oxide, or more than 75 hundredths of a per cent. water soluble arsenic oxide. No sample of arsenate of lead, whether in paste or dry form, should contain more than 75 hundredths per cent. water soluble arsenic oxide, or there will be danger of burning the foliage of fruit trees with it, particularly peaches.

The common commercial standard for the paste form is about 45 per cent. water and 15 per cent. arsenic oxide, while the powdered form has no free water present and contains about 30 per cent. arsenic oxide. Hence a pound of powdered arsenate of lead is equal in poisoning power to two pounds of the paste form. Whenever a spray formula calls for 2 pounds of paste, one pound of the powdered form will answer just as well.

Arsenate of lead is a rather slow acting poison, and for that reason is not as well suited for combatting some insects as other poisons. For example, it is too slow acting to be the best poison for the potato beetle. There is little danger of the burning of foliage by arsenate of lead. Sometimes a little burning is found upon the peach and the Japanese plum. Wherever there is danger of burning the danger can be obviated by using a pound of freshly slaked lime to every pound of arsenate of lead used. Arsenate of lead also sticks firmly to foliage and is not easily washed off by rains when it has once dried upon the leaf. The suspension qualities of this poison are also good, thus insuring an even distribution of poison throughout the spray tank.

For plants which have leaves that are not easily burned, use 2 to 3 pounds of arsenate of lead paste, or half the amount in powdered form, to every 50

gallons of water. For peaches and other plants with tender foliage, use from 1 to 2 pounds of the paste, or half as much of the powder, to every 50 gallons of water.

ARSENITE OF LIME.

Arsenite of lime is a favorite poison with many apple growers. It is very effective, is cheap and can be made at home with but little trouble. It is a particularly good spray for the codling moth of the apple. It does not have as good sticking properties as arsenate of lead.

To make at home, use 2 pounds of white arsenic, 1 pound of stone lime and 1 gallon of water. Slake the lime and add the arsenic, make up to one gallon with water and boil for 20 minutes. A large amount may be made by using the water, lime and arsenic in the same proportion. A gallon of arsenite of lime is equal in poisoning strength to two pounds of Paris green and costs much less. This poison will keep for some time but it is better to make it up fresh. To make an old mixture safe it would be best to add a little milk of lime and re-boil it for 20 minutes.

ARSENITE OF SODA.

This poison is an old-time favorite of many farmers. It is often known under the name of the Kedzie formula, as it was first advocated by the late Dr. R. S. Kedzie, of Michigan. It is easily made at home and may be kept indefinitely without deteriorating in strength, providing it is stored in tightly stoppered glass jars or stone jugs.

To make, use 1 pound of white arsenic, 4 pounds of sal soda, and 1 gallon of water. Boil until the mixture is perfectly clear. One gallon of this mixture is equal in poisoning properties to one gallon of arsenite of lime or two pounds of Paris green. However, this poison should never be used alone with water, as it is certain to burn the foliage. To make it safe to use add one pound of freshly slaked lime to every quart of the mixture, so we might write the formula as:

Arsenite of soda 1 quart
Stone lime 1 pound
Water 50 gallons

Thus the material really goes upon the plant in the form of arsenite of lime. This poison is very cheap and very effective. It is often used with Bordeaux mixture for spraying potatoes. Used with Bordeaux, there is always enough excess of lime in the Bordeaux to unite with the arsenite of soda to make it a safe spray. All that is necessary is to pour a quart of the stock solution of arsenite of soda into 50 gallons of Bordeaux and go ahead.

Paris green is such a well-known poison that it hardly seems necessary to say much about it. It is used at the rate of about ¼ pound to 50 gallons of water, or if used dry it may be mixed 1 pound to 50 pounds of air slaked lime. When used as a spray it is always best to add a couple of pounds of freshly slaked lime to every pound of Paris green. This will act as an insurance against burning the foliage.

CUT-WORM BAIT.

The following mixture will be found efficient against cut-worms: 15 to 20 pounds of bran; 10 pounds of middlings; 3 pounds of white arsenic; 1 gallon of cheap molasses. Mix thoroughly and add just enough water to allow of molding into small balls. Put these under

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shingles or place near the plants. Or no water is added and the mixture is scattered broadcast over the field or garden where the cut-worms are troublesome. Needless to say one should be careful to keep the poison out of reach of poultry.

The Young Man and Fruit Growing

MARTIN KING, JR.

The young man who takes up fruit growing as a profession should possess energy, patience and good judgment, in addition to a real love for trees and plants. The work is hard. Fruit tree and small fruit plantings require good care in order to produce profitable crops. Spraying, pruning, cultivating, fertilizing—all must be done at the proper time, no matter what the weather, and it requires a live man who is not afraid of cold and wet to meet the emergencies that arise on a fruit farm.

Oftentimes one has to wait for years before the results of long, patient toil and planning are obtained. A Northern Spy apple orchard, for instance, will not bear a profitable crop within eight or ten years from date of planting. Peaches, the earliest bearing kind of fruit trees, will not fruit within three years from planting. Even strawberries, the quickest to come into bearing of all fruits, require one season to get a start in the ground before fruiting. In addition to this, the patience of the fruit grower is often put to a severe test when he has a fine crop ready to pick, only to find that the big markets are over supplied and that because of imperfect methods of distribution, the whole crop must perish on his hands. Then, too, hard freezing weather at just the time when the fruit buds are the tenderest, insect pests and fungus diseases, hail storms, cyclones and heavy winds, come and undo the work, care and planning of months. Fruit growing, therefore, is no profession for the young man who cannot meet these losses courageously and look forward patiently to some future harvest.

Good judgment comes into play in every phase of the business. A good site for the orchard or small fruit planting must be selected. Varieties must be selected that are adapted to the soil and climate of the section. Account must be taken, too, of the market to be exploited. For instance, it would be folly to plant Baldwin apple trees in some parts of the South, although it is the leading market variety in New York. Or again, an early summer apple that cannot be shipped long distances might do very well at Ridgewood or Montvale, N. J., within a short ride of New York City, and the fruit bring a splendid profit, while at the same time a like orchard 500 miles from market would be a complete failure. One cannot be too visionary and survive the fruit growing profession, unless backed by ample capital; and yet the very nature of the business requires that one be not afraid to venture where there is more than ordinary business risks. Plans must be carefully laid and fine judgment used in arranging the succession and diversity of fruit crops, so that a severe loss on one crop or one season may be met and overcome by a good, substantial profit on some other crop. If the peaches spoil on the trees for want of a market, a profit of \$200 per acre on the apples and strawberries will more than cover the loss.

A thorough knowledge of fruit growing can best be obtained by a course in horticulture at some good university, and this training supplemented by practical experience on an up-to-date fruit farm. Where such a course is out of

the question, a careful study of books on fruit growing, bulletins issued by the Department of Agriculture and the state agricultural experiment stations should be made. Horticultural societies hold their sessions usually during the winter months and a fund of information and practical advice may be obtained by attending these conferences. The knowledge gained may be put to a practical test on the farm by making small plantings to start, and increasing the acreage as one acquires a more intimate knowledge of the work.

There is a good profit in the fruit growing business, properly conducted. Many orchardists have grown rich in a few years out of the returns from their trees. The demand for high quality fruit, both preserved and fresh, is growing at a greater rate than the increase in our population would seem to warrant, due, no doubt, to the modern belief that a larger fruit diet is more healthful and to the large proportion of immigrants from the fruit loving peoples of southern Europe. Then, too, thousands of large orchard trees are being neglected through the ignorance or shiftlessness of their owners, and thousands more are being planted every year that are not cared for, or that are not adapted to the soil and climate, and consequently will never produce fruit on any account. The natural conclusion from these facts is that there will be even greater profits in well kept fruit plantings in the coming years.

To the real lover of nature and of plant life, fruit growing is a most delightful occupation. The open country in which to work, and the health and vigor it imparts to the body, the mystery of bud and leaf and twig, the nature and properties of soils, the life habits of destructive pests and the methods of controlling and exterminating them, the adaptability of varieties to different sections, the discoveries of the great monk, Mendel, concerning the laws of heredity and their application to budding and methods of distribution, the education of men and women to the value of a more selected and extensive fruit diet, the joy and wonder of taking a natural crab apple tree root and grafting on it a branch from a select variety like McIntosh or the luscious Spy or Delicious, then to see this waxed and apparently lifeless thing start its tender shoot in the springtime, see it increase in size with each succeeding season until it becomes a grown-up tree and to behold at length the baskets of enticing apples with their blending of color and fragrance and their luscious, delightful flavor—all these together make up the joy of the fruit grower's profession and contribute in an immeasurable degree to the broadening and deepening of his spiritual life.

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It is usually claimed that the red currant bears its best crop when the wood is three to five years old. With us, at five years of age the bushes made their highest yield. Up to that time we give no pruning. From the sixth year on we thin out the old wood, a shoot here and there, leaving seven or eight strong canes if the bushes have sufficient space, say 6 feet by 5 feet, permitting a new cane to come in to replace an old one. From this time on a couple of the outside canes, those which lop on the ground, are removed annually. If too many new shoots start, they are cut out to two; otherwise the bush will become too thick. Keep the plant as a bush, not as a tree. It is much longer lived and easier renewed.—S. F., New York.

Don't Pot Your Trees



Drawn from actual photo.—Note marked difference in growth between tree planted in blasted hole and tree planted in spade-dug hole.

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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

Inoculation for Alfalfa

Inoculation is absolutely necessary to insure successful results in growing alfalfa in the Eastern States. The lime prepares the soil for the development of the bacteria which form the nodules on the roots of the plants. These bacteria aid the plant in securing its nitrogen from the air. Most, if not all, eastern soils require inoculation, as the bacteria common to alfalfa are not found on the cultivated clovers. Repeated experiments and demonstrations have shown that it is useless to expect good results with alfalfa without inoculation. It is only where land has been heavily manured or fertilized that the effect of inoculation has not been so marked. In Delaware co-operative tests on a large number of farms showed that the growth of alfalfa was increased more by inoculation than by fertilizers, although the combination of both gave the maximum yields.

The inoculation may be introduced through the use of commercial cultures, or through soil from a field where alfalfa has been well established, as indicated by the presence of tubercles on the roots of the plant. Inoculation through commercial cultures is the more desirable method, especially where large acreages are to be sown. Likewise, there is more or less danger of introducing weeds and plant diseases through the soil-transfer method. I have known such weeds as garlic to be introduced in this way. It is possible that alfalfa disease organisms might be spread in the same manner. Other than this, the use of soil for inoculating purposes involves considerable labor. Where commercial cultures are used, care should be taken to follow the directions which accompany the material. Excellent results have been secured from the use of the prepared cultures. The important points to note are whether they are fresh and whether the directions for use are carefully followed. The cultures are first diluted with water and sprinkled over the seed. It is well to keep stirring the seed, so that the whole mass may become thoroughly moistened. No more of the solution should be used than will moisten the seed. Then spread out to dry in a shady place. A well ventilated barn floor is an excellent place for treating and drying the seed. As soon as the seed is dry it may be sown. In no case should the treated seed be left unsown for a number of days. Hence it is best to treat the seed the day it is sown, as it will dry in a few minutes. If the seed is to be sown broadcast, for example, with a wheelbarrow seeder, it is best to choose a cloudy day. If the day is bright the harrow should follow the seeder immediately.

If the soil transfer method is used care should be taken to see that the soil comes from a field where the alfalfa is vigorous and is a full stand, as under these conditions weeds are less likely to be found. Not less than 200 pounds of soil should be used to inoculate an acre. In order to facilitate the spreading of the soil, the 200 pounds should be mixed with an equal quantity of soil from the field which is to be sown. Of course, where the inoculated soil can be secured in quantity near by it will not be necessary to mix. In this case insure even distribution. This quantity of soil, if well pulverized, may be put

through the fertilizer compartment of a grain drill, or through a lime distributor. If a drill is not available the soil may be sown broadcast. In any case it should be harrowed in at once, as the direct rays of sunshine have an injurious effect on the bacteria. The soil should be taken from a field where the plants exhibit evidence of thorough inoculation. That is, the plants should have a sufficient number of tubercles on the roots to show the healthful activity of the bacteria present.

Scalping the soil along the edge of the alfalfa field to the depth of 4 to 6 inches will give the best grade of soil for inoculation. This will disturb the crop but slightly, as several hundred pounds may be taken in a very small space.

Inoculation will bring the best results only when the soil is thoroughly limed and supplied with a stock of organic matter and mineral fertilizers, as has been explained above and in preceding articles on alfalfa in The Practical Farmer. In another issue we shall discuss the details of seeding.

Start Cabbage Seedlings in Sandy Soil

Experiments carried on by Professor C. E. Myers, of the Department of Horticulture at the Pennsylvania State College to determine the effect of different soils on the root development of cabbage seedlings show that the best results are obtained when sand composes the greater part of the seedbed. The roots will thus be stimulated and the tops held back in the early stages of plant development. Plants thus treated come along evenly and uniformly when they are transplanted into a fertile soil. Such soil should be composed of equal parts of sand, loam and well-rotted manure. The experiments at State College indicate that plants set two or more inches apart in the flats at the first transplanting will mature earlier than those planted more closely.

Queries Answered

Treating New Land.—J. B. B. Virginia, writes: "I own a dairy farm in Maryland, from which the large, original timber, mostly oak—has just been cut. The sawmill was located on the place, and in selling I reserved the young growth and the lapwood. I am selling the lapwood to the neighborhood farmers, and find they are clearing the ground of pretty much everything that will burn. To get this boundary converted into pasture for my dairy stock, and rid the ground of stumps, is the problem I want you to help me solve. I must, however, consider the cost. There are considerable loose stones on the ground, and here and there a wet spot. I think sunlight and air will very materially dry it out and save me a considerable amount of expensive draining. What method would you advise me to pursue to get it in grass after the brush has been burned off? How soon after cutting oak trees may the stumps be economically blown out with dynamite or pulled up with a stump puller? Which method do you consider the cheaper? I have been told that grass seed sowed broadcast on top of a March or late spring snow will take root almost as well as if harrowed in. Is this true? Any advice or suggestions you may be able to give me will be appreciated."

The most economical plan is to attempt to put the land down to grass at once. To this end all brush, rubbish and even dry leaves on the ground should be burned. If the large stumps are not too numerous, and the small ones have been cut near the ground, the grass and clover seed may be sown early in March and covered with a disk harrow. Of course, if the stumps are very thick, or have been cut high, it will be impossible to get over the land with a harrow. In the latter case the seed may be sown somewhat earlier and the action of the frost and early spring rains will aid in covering them. If the

land is very acid it would be well to apply broadcast one ton of quick lime per acre some days before seeding. For the first year or two the sprouts from the stumps should be removed in July or August. This will hasten the decay of the stumps which may then be more easily removed later. If one can get a fair stand of grass and clover it will not be many years before the stumps will rot out, or, at any rate, be of little trouble in a pasture. Small stumps may be economically removed with a stump puller, while the large ones will probably require the use of dynamite.

Bermuda Grass.—A. D. B. Tennessee, writes: "My land is what is called here free-stone land. The soil is loose and mellow, filled with coarse gravel and stones. The subsoil is a hard clay, full of coarse gravel and retains moisture well. The farm is hilly. One long hill has been in cultivation for 15 years and has never been seeded down. The land seems very well adapted to most kinds of grasses, and better adapted to sassafras brush than anything else. I had thought of bringing the land to a better state of cultivation by sowing legumes, but I find that while I am preparing the soil and getting the crop started there comes a heavy rain and washes the soil badly. Then I find that the more I cultivate the better the sassafras thrives, and if I seed down and keep them cut they will soon disappear. So I have concluded to seed down permanently. I think of sowing either rye or oats and a mixture of timothy, red top, or orchard grass, alsike clover and one pound of Bermuda grass per acre. I should like to know in particular about the quality and quantity of Bermuda grass and the time and preparation for sowing."

Bermuda grass is a perennial, lasting from year to year, and makes one of the most excellent soil binders for the Southern States. The plant covers the ground closely and in that way prevents the washing of the soil. It tends to crowd out the other grasses or plants where it grows. Bermuda is best sown in the spring. Generally 5 pounds of seed are used per acre. You should have but little difficulty in getting Bermuda started by sowing it in a mixture such as you have mentioned. It would be best to sow the oats rather thinly, not more than 6 pecks per acre. Bermuda grass makes an excellent pasture but should be rather closely grazed, as the mature stems become rather wiry and tough. The yields of hay range from 1 to 3 tons per acre. The Bermuda hay is said to be of the same feeding value as timothy for horses or for dairy cattle.

To Measure Hay.—H. F. Pennsylvania, writes: "Please give rule to determine the number of tons of hay in a mow or stack."

To find the tons of hay in a mow or stack, multiply the length, breadth and height and divide the result by about 500 for loose hay, or 450 to 460 if it is packed tight.

Hay Query.—J. S. Pennsylvania, writes: "I wish to sow some of this spring to cut for hay and follow on the same ground with wheat and grass. I was thinking of sowing cowpeas, oats and barley mixed. How about soy beans alone, and will they make a second growth if the first crop is gotten off in time? I want the hay for horses and cattle. I would be very glad to have your suggestions. I intend to apply about one ton of ground limestone per acre."

The soy beans will make an excellent hay for all kinds of stock and the crop can be removed in time to sow to wheat. Soy beans will not make a second growth if cut after the pods begin to form. The land, after the beans have been removed, may be disked and made ready for wheat with little expense. Sow the beans with a grain drill at the rate of six pecks per acre, on well prepared land about the first week in June in your locality. Be sure to inoculate the seed. Sown in this manner the beans require no cultivation and may be cut for hay when the pods are about half filled. Get the Wilson or Ito San variety of soy beans, if possible. Another crop which may be used to excellent advantage under your conditions is a mixture of Canada peas and oats, about 1½ bushels of each, sown as early as the land can be prepared. This crop may be removed just as the oats are in the "dough" stage. This crop will come off

about the first week in July. In this case the land after the peas and oats will have to be plowed and fitted for wheat.

Phosphoric Acid.—M. L. Y. Pennsylvania, writes: "I had a field of wheat last year that produced a good crop, but there were many small, shriveled grains. Do you think this was due to the shortage of phosphoric acid? What is the difference in the fertilizing value between raw rock and acid phosphate?"

It is quite likely that the shriveled grains were caused by a lack of plant food, particularly phosphoric acid. The lack of the mineral elements of plant food, phosphoric acid and potash, will generally be observed in the slowness

of the grain to ripen and in the undersized kernels. In most cases phosphoric acid plays a large part in developing plump kernels. There are other causes that may account for shriveled grain, such as plant diseases, yet, if the wheat is properly fed, that is, with a balanced ration, little trouble may be expected from disease. Very late seeding in some cases may result in shriveled grain.

The difference between raw rock and acid phosphate is due to the fact that the latter is raw rock that has been treated (acidulated) with equal parts of sulphuric acid (oil of vitriol). This

process renders the phosphoric acid directly available for the plant. Raw rock is not available to plants until it is mixed with decaying manure or other organic matter in the soil for some time. Then it is gradually reduced to a condition that makes it usable in some degree by the plants. However, this process is slow and large results should not be expected the first season. Raw rock contains about 28 per cent. phosphoric acid, unavailable; the acid phosphate contains about 14 per cent. phosphoric acid, nearly all of which is available, and ready for the plant to use immediately.

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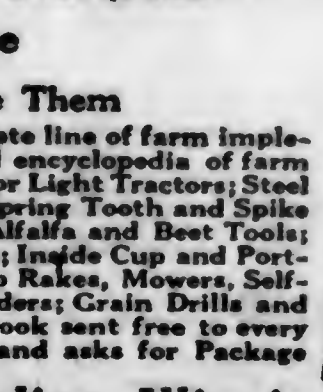
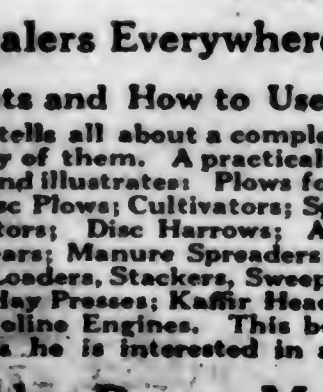
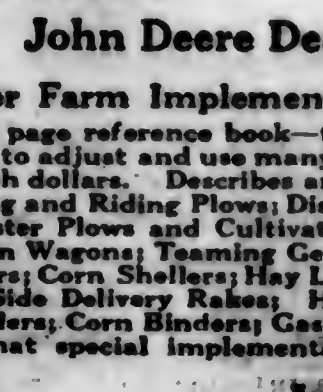
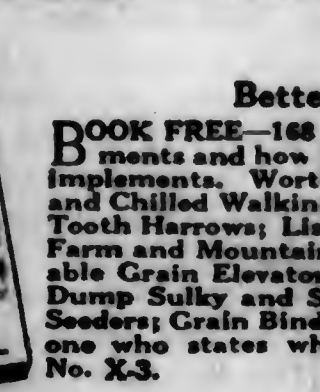
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POULTRY

Edited by F. V. L. TURNER
All letters, inquiries and requests in reference to poultry, should be addressed to the Poultry Editor of The Practical Farmer, Philadelphia, Pa.

Feeding Baby Chicks

To the old-timer, he or she who has fed the baby chick in the "good old way," there is nothing attractive in a new fangled, up-to-the-minute feed for the little ones, fresh from a 21-day-old egg. Perhaps there should not be, and against this "good old way" there will be no argument. However, a closer study of the mother hen, her methods and means, her resources, her environment and modern necessities force the makers of these foundation stones of the poultry business into the adoption of whatever is best in the economic production of the greatest number of chicks from any hatch that can be made, either with the hen or an incubator. With the man or woman possessed of the good red blood of ambition to succeed, and the determination born of necessity, aside from a desire for better human personal achievements, comforts and higher existence, the best and more improved is always desirable and, fortunately, almost as often obtainable.

Johnnie cake never raised all the livable chicks and the hen never gave her offspring the tender care and watchfulness that man or woman is forced to bestow, for success. Corn meal as a complete ration is death in the extreme; oat meal alone for more than a few days is insufficient; bread crumbs do not nearly contain all that chick life demands. Eggs, boiled and crumbled fine, can not replace the elements necessary to growth and health.

Again, in the case of artificially brooded chicks, the mother hen's warning against over feeding and objectionable substances is entirely lacking. To keep clean and healthy, to promote growth and sturdiness the ration must contain the elements the mother hen tries to force upon her young from the peep of day until nightfall.

Nature's teachings, certainly in the case of young chicks, are the human's sole education; study of hen sense and hen practices perfects in the gentle art of rearing the infantile fowl. With our superior knowledge of food elements and food values we are woefully lacking in the even distribution of protective science. Prevention may be worth a ton of cure, but who can prescribe the preventive measures, be they kind or quantity? Not us, who rear artificially. The hen and her greatest success in number of chicks carried through the dependent period should be not our ultimate so much as it should be our beginning on the road to final achievement.

A multitude of chick raising rations have been given to us in the past twenty years; experts in rearing have prescribed this, that or the other food as best suited to the needs of the downy charge left us to rear. Agricultural experiment stations have devoted much time and money to a study of the chick's needs in warmth and feeds and still the whole of chickdom demands a better way. The very latest feed prescription offered to the poultry public guarding the chick's life is given by the Missouri State Poultry Experiment Station, Mountain Grove, Missouri, as follows:

"Many methods of feeding are successful. The following rations have given good results:

"First day.—Yolk in body supplies food. Do not feed.
"First week.—Boiled egg cut fine,

bread crumbs and oat meal, equal parts. Feed in form of mash on clean board all they will eat in 20 minutes, five times per day. Give sour milk each forenoon and water in the afternoon. Keep fine "it or sand before them.

"One to five weeks.—Equal parts wheat bran, shorts, oat meal and corn meal. Use as mash in hopper and give good grade of commercial chick feed in litter. Two pounds fine charcoal and one-half pound fine salt should be added to each hundred pounds mash. Sour milk or water should be before birds at all times."

Sour milk contains, and is largely composed of, the bacillus Bulgaricus, or health germ of lactic acid; a liberal supply is always highly beneficial whenever obtainable and is also of considerable food value. Commercial chick feed means the chick size grain. Sorts means middlings. Bone meal does not mean ground bone, raw, but means the ground boiled bone, especially prepared for poultry. Beef scrap is the commercial chick product prepared for poultrymen.

The art of feeding is individual success. From one to five weeks the mash is placed in hoppers so that the youngsters have free access to it at all times. The amount of chick grain (commercial chick feed) is governed entirely by conditions. About 9 A. M. a very light scattering of grain in the deep litter will (or should) keep the chicks busy until afternoon; at 2.30 P. M. a liberal scattering of chick grain should keep them busy until bed time.

When the little ones have retired for the sleeping portion of the twenty-four hours, go over them carefully and those that are sufficiently fed will have full, plump crops; the underfed (eventually the weaklings) will have soft crops. These latter should be placed to themselves that more feed can be secured. While the charcoal will help maintain health, as will sour milk, an added precaution should be taken with the poor feeders. Mix each five pounds of mash with one-half ounce of Epsom salts, one-half ounce of bicarbonate of soda (baking soda) and add one-eighth of an ounce of black pepper and an equal amount of powdered gentian root.

Keep all drinking vessels clean and sweet and add a teaspoonful of lime water to each pint of drinking water.

Care and feeding from five weeks to maturity will be fully dealt with in our next issue.

Pure-Bred Poultry an Advantage to the Farmer

The breed of poultry which a farmer should keep will depend upon several conditions. Pure-bred stock of some standard variety is most desirable for several reasons.

F. D. Crooks, of the poultry department of the Pennsylvania State College, outlines some of the essentials to be kept in mind in selecting poultry.

Pure-bred stock is more uniform in color, therefore it makes a flock more attractive. The farmer is naturally more interested in such a flock than he would be in mongrel birds. Pure-bred stock costs very little more than mongrel stock.

A few birds may be purchased the first year and the flock increased by hatching the eggs produced by the original hens. The cost of feeding and caring for



for poultry profits.

Pullets lay earlier. More eggs in cold weather. Cockerels mature quicker. More chicks survive—if you use KEYSTONE FOODS. The proper food for every age—
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Imperial Pekin Ducks
Baby ducks, \$15.00 per 100. Hatching eggs, \$10.00 per 100.
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EGGS (BARRED PLYMOUTH ROCKS, SINGLE COMB BROODER ISLAND REDS AND White Orpingtons, \$2.25 per 10; \$3.00 per 100. Best strain. Circulate free. Sunnyvale Poultry Farm, Pittsfield, Ma.

pure-bred chickens is no more than for mongrels. A scrub eats as much as a pure-bred and the returns from the former are less. Pure-bred stock of the egg type lay better than mongrels and the eggs are more uniform in size, color and quality, thus commanding the best prices.

The dual-purpose type of hen is ordinarily considered best for the farmer, insuring a good quality of meat and a good supply of winter eggs. The market trade demands birds which are uniformly fleshed and of even size and color. The most uniform results in this particular are difficult to obtain with a mixed flock.

Pure-bred stock may be sold for breeding purposes at much better prices than scrub stock.

The City Man and the Poultry Business

A. J. BRADLEY.

In these days of the increased cost of living in the cities—a problem which is brought before the city dweller with more force than to his country cousin—the average urban resident fondly imagines that the farmer, and particularly the poultryman, has a life which the late Grover Cleveland once described as "one grand, sweet song." To the dweller who resides within the zones marked by the constant din of trolley cars and with his job depending upon the whims of his "boss," the idea of being out in the open country and taking no orders from an employer, and in a position to make faces at the alarm clock, presents a vista that has lured more than one man from the desk that knew him for years, and turned out in the end a mere will-o'-the-wisp.

Pretty nearly every city man has, or has had, the "hen fever" at some period in his life. To some it comes with strong grip and cannot be shaken off; others have it in mild form and are content to take an interest in poultry by visiting the shows and sending for the catalogues, hoping that some day they may be in a position to get into the poultry business. They never reach the stage where they actually invest money in real, live hens and a poultry plant, be it ever so small. To them the hen fever may be merely what the physicians term a varioloid.

Every now and then we hear of city men who sell out their business or give up their jobs and raise all the money they can, often by borrowing from relatives and friends, and embark in the poultry business. These same men would not think of going into another business after spending the younger years of their lives in an office in one branch of trade, or in a workshop in the same city, and yet they unhesitatingly move into a community that is new to them and to their families and embark in a business that is probably as full of details as the one which they spent years in learning. It would be idle to assume that all or even a small proportion of them succeed, but they do not, and more and more failures are scored up against the poultry business.

The reasons for the various failures make an old story. They are similar, probably, to the reasons given by the investigator for Dunn and Bradstreet after a post mortem on any other commercial failure—a lack of knowledge and experience of the business. To this may be added two contrasting reasons—too little money and too much money. In one case the trouble is as serious as in the other. Too frequently the city man becomes tired of the daily grind of the office and workshop and decides that his health or that of his family requires

that he get out in the country and raise poultry. No "get-rich-quick" literature was ever more alluring than the poultry articles that appear in the big city newspapers, and all that the average city man who has the "hen fever" imagines that he requires to become independent of the time clock and the pay envelope, is to get out in the country with a few acres and a few hens.

The business man who has too much money and who is stricken with the "hen fever" straightway buys a poultry plant that is unloaded on him at a fictitious price by an experienced man, generally possessed of a mysterious "system" for turning cheap food and scraps into high priced eggs, and proceeds to enter upon commercial poultry raising on a large scale. He saddles upon the plant a so-called expert and proceeds to run it with the expert and a number of poor relations who must be kept, anyhow, and who regard poultry raising as a snap. In a short time the overhead expenses are so heavy that it is impossible to produce poultry or eggs at a profit. In a year or two the plant is sold for a song, and the natives resort to their "anvil chorus" about the city man and his failure in raising poultry.

The city man with money who loses it in the poultry business is in a class by himself, and the majority can well afford to drop a few thousand in their experiments. It is the middle aged clerk, or mechanic, who risks the savings of himself and his family for a lifetime in the poultry game who is deserving of sympathy. He realizes that he is getting up in years and that he will not be able to keep abreast of the daily grind in the city many years. To have the opportunity to get out in the country, away from the fierce struggle and competition of the city, comes as a Godsend, and he looks forward to spending his declining years in a pleasant and profitable business, away from the necessity of punching a time clock twice daily.

When I started in the poultry business it was with the same rosy visions of wealth and a life of ease that actuates nearly every city man who becomes interested in the poultry business. My outfit consisted of a run-down farm, about 50 hens and a stock of optimism that was nearly exhausted before I learned even the A B C of the poultry game. When I began taking care of those hens it was nearing winter and the work was cold, but healthful. I fed them according to the feeding fads that were exploited in the poultry papers and the Sunday supplements at that time, and looked for the resultant output of eggs. It was at a time when eggs were selling at a good price. Frequently I rushed out in gloe when I heard the hens cackle, hoping that the "watchful waiting" on my part was at an end, only to find that the hens were alarmed at a stray dog or cat. They acted in a manner that would have driven an efficiency expert to tears.

Coming from the city to the country, I found conditions similar to those which may be found on many farms, particularly when the place has been rented to tenants who find it necessary to move each spring to new pastures. The preceding tenants had spent their days in thawing water pipes in winter, hauling water in summer, going outdoors to reach the poultry houses and barn and stuffing phosphate sacks into broken window panes, a routine which did not appeal to a city man, fresh from card index methods. These wasters of time, money and comfort had to be attended to before much work could

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PHILADELPHIA, MARCH 15, 1916

Number 6

FIRST PRIZE ARTICLE

From "Just a Farm" to a Paying Dairy Farm

By G. H. DACY

PROXIMITY to the railroad and ready access to one of the best milk market cities in the country steered me into the dairy business after I had practiced general farming, the feeding and raising of steers, hogs and horses and the production of pure-bred seed for a number of years. Previously I had not attempted the milk game, because I dreaded the original investment in cows, dairy equipment and the remodeling of my barn to fulfill the dairy requirements of the average city trade.

Recently there has been little net profit in the winter feeding of steers or hogs. Grass fed heaves and forage-made pork have brought good prices, but the net income from ensilage cattle and corn-fed hogs has not fattened the bank accounts of many farmers. That is why I tackled dairying. My first problem was to bring my barn up to snuff. With farm labor I remodeled an old bank barn 31½x29 feet in size, so that it would accommodate 16 cows. I equipped the barn with steel stalls and stanchions at a cost of \$5.10 per stall. I put fourteen windows in the stable, so that there are 5 square feet of window surface per cow. I laid a good concrete floor, with feeding mangers 2 feet wide, and manure gutters behind the cows 16 inches wide and 8 inches deep.

There was a 70-ton stave silo at the middle of one side of the barn, so that I arranged my stalls eight to a side, centering on a feedway which connected with the silo. I celled the top and one side of the stable with pine flooring. The other walls I plastered up with cement and then painted the walls red to a height of 4 feet behind the cows, while I whitewashed the balance of the walls. I left a trap-door in the ceiling directly over the middle of the feedway, so that I could have access to the 50-ton mow above the stable where I store my hay and grain without having a stairway in the stable which would continually allow dust to enter the dairy barn. Access to the mow is gained by a ladder near the silo.

At an outlay of \$275 exclusive of my personal labor, I modernized my old barn so that today I am able to satisfy the demands of the most rigid dairy inspector. I already had a small dairy house on the farm, which had a concrete floor. I built a partition in this house and put in four windows and used one part of the building for a wash-up room, where I keep my stove and boiler, while I have my cooler in the other part where I cool the milk.

I spent over a month trying to buy good milch cows in Tennessee, Virginia and Maryland, but without success, as the prices for good-producing cows were too high, while the dairy cows which could be bought worth the money, were either of the beef type or else they were runty, evidently the result of in-breeding, breeding too young and underfeeding. Finally I went into northern Pennsylvania, and there I found plenty of young, good-producing, typical Holstein and Guernsey grades to be had at farmers' prices. I purchased one pure-bred registered Holstein bull calf, as well as 17 grade Holsteins and 5 grade Guernsey cows, enough to make a good carload, and bred to freshen throughout the year.

I sell my milk in Washington, D. C., to a distributing concern that pays me 24 cents per gallon for the seven winter months, 18 cents for May, June, July and August, and 20 cents for September, for milk that tests 4 per cent. At these prices it pays me better to sell to the middleman than it does to endeavor to build up special trade. If I sold milk and cream directly to the customers I would have to bottle the milk on the farm and pay some person in the city to deliver the milk. I would have trouble with collections and the extra worry would more than cover the few extra dollars of profit that I would realize from such special customers. However, I hope to be able to work into the hotel and restaurant trade, where I can ship the milk in cans and furnish a dependable supply the year around at a contract price which will permit me to still ship the milk in bulk.

I raise all my feed with the exception of cotton seed meal and bran, which I buy with the money

ghum, which I make into hay for the cows. If I run short of summer feed I cut a load of peas and beans each day during the late summer, and feed it as a soiling crop. I have good success in feeding a mixed ensilage composed of three parts of corn to one part of cowpeas and soy beans. However, the peas and beans have to be raked up with a hay rake, and if the ground is at all stony, rocks will be introduced into the ensilage cutter and probably will seriously damage the machine. If the cowpeas and soy beans are cut with an old-fashioned self reaper this difficulty may be controlled. A 7-acre field of alfalfa which I have under way will help me greatly in supplying plenty of cheap protein in the ration when the field is in productive shape. I will feed part of the alfalfa green as a soiling crop, while the balance I will make into hay.

At present I aim to keep cows that will produce 7,500 pounds of milk a year which will test around 3.5 per cent. I like persistent milkers, and some of my cows have had two calves over a period of several years without being dry. I find that one good Guernsey to four or five Holsteins in the herd will keep my milk test above the 4 per cent mark. My ambition is to grade the herd up until finally I am able to maintain a herd of practically pure-bred Holsteins with a few pure-bred Guernseys. I hope each year to increase the production standard of the herd so that in a few seasons I will have a herd of cows that will average 10,000 pounds of milk per year.

My calves remain with their mothers the first day or so in order that they may realize the full benefits from the colostrum. Then they are removed from the dams and fed by hand. At the end of ten days a little calf meal is introduced into their ration as a substitute for a part of the milk. As the calf grows older the amount of calf meal is gradually increased and the proportion of whole milk correspondingly lessened until when the calf is four weeks old he receives only calf meal as a milk substitute. A small box of grain containing a little corn-and-cob meal, gluten and bran, is kept before the calves all the time, as well as clover hay.

I raise the best of my heifer calves and sell the bull calves and heifers which I do not wish to keep. I advertise in several farm papers offering 10-day-old Holstein or Guernsey bull calves for \$10 per animal, and heifer calves of the same age for \$13 per head. The bull calves, for all practical purposes, are suitable for use as breeding animals in the herds of farmers who are just starting in the dairy business, and who are not able to pay \$75 or \$100 for a pure-bred bull calf. My calves are from three-quarters to fifteen-sixteenths pure, and are sired by some of the best bulls in northern Pennsylvania. Any of the calves which I do not sell in this way I develop on calf meal until they are six to eight weeks old, when I sell them for veal.

Dairying pays me a certain and profitable income every month. In addition, it is improving the crop yields of my farm. I throw one pint of raw rock phosphate behind each cow in the stable daily, and

Let the Calves Have Plenty of Exercise in a Sunny, Dry Yard



(Continued on page 125)

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ghum, which I make into hay for the cows. If I run short of summer feed I cut a load of peas and beans each day during the late summer, and feed it as a soiling crop. I have good success in feeding a mixed ensilage composed of three parts of corn to one part of cowpeas and soy beans. However, the peas and beans have to be raked up with a hay rake, and if the ground is at all stony, rocks will be introduced into the ensilage cutter and probably will seriously damage the machine. If the cowpeas and soy beans are cut with an old-fashioned self reaper this difficulty may be controlled. A 7-acre field of alfalfa which I have under way will help me greatly in supplying plenty of cheap protein in the ration when the field is in productive shape. I will feed part of the alfalfa green as a soiling crop, while the balance I will make into hay.

At present I aim to keep cows that will produce 7,500 pounds of milk a year which will test around 3.5 per cent. I like persistent milkers, and some of my cows have had two calves over a period of several years without being dry. I find that one good Guernsey to four or five Holsteins in the herd will keep my milk test above the 4 per cent. mark. My ambition is to grade the herd up until finally I am able to maintain a herd of practically pure-bred Holsteins with a few pure-bred Guernseys. I hope each year to increase the production standard of the herd so that in a few seasons I will have a herd of cows that will average 10,000 pounds of milk per year.

My calves remain with their mothers the first day or so in order that they may realize the full benefits from the colostrum. Then they are removed from the dams and fed by hand. At the end of ten days a little calf meal is introduced into their ration as a substitute for a part of the milk. As the calf grows older the amount of calf meal is gradually increased and the proportion of whole milk correspondingly lessened until when the calf is four weeks old he receives only calf meal as a milk substitute. A small box of grain containing a little corn-and-cob meal, gluten and bran, is kept before the calves all the time, as well as clover hay.

I raise the best of my heifer calves and sell the bull calves and heifers which I do not wish to keep. I advertise in several farm papers offering 10-day-old Holstein or Guernsey bull calves for \$10 per animal, and heifer calves of the same age for \$18 per head. The bull calves, for all practical purposes, are suitable for use as breeding animals in the herds of farmers who are just starting in the dairy business, and who are not able to pay \$75 or \$100 for a pure-bred bull calf. My calves are from three-quarters to fifteen-sixteenths pure, and are sired by some of the best bulls in northern Pennsylvania. Any of the calves which I do not sell in this way I develop on calf meal until they are six to eight weeks old, when I sell them for veal.

Dairying pays me a certain and profitable income every month. In addition, it is improving the crop yields of my farm. I throw one pint of raw rock phosphate behind each cow in the stable daily, and

(Concluded on page 125)



Let the Calves Have Plenty of Exercise in a Sunny, Dry Yard

realized from my annual wheat crop. This summer I intend to build another silo which I will be able to put up with home labor, at a completed cost of about \$100 for a 75-ton building, as I will use lumber which I have sawed on my farm. At present I am feeding a grain ration composed of 400 pounds of corn-and-cob meal, 200 pounds of cotton seed meal and 100 pounds of bran, each cow being fed according to her capacity and production, as I use the scale and Babcock test to locate the herd boarders.

Corn ensilage and soy-bean-cowpea-sorghum hay, with a change to clover hay occasionally, comprise the roughage in my ration. I always raise about 25 acres of winter rye or a combination of winter rye, hairy vetch and crimson clover, which supplies me with late fall and early spring grazing for the cows. I topdress this field with manure and unless I am short of feed and need part of the crop for hay I turn under the manured cover crop about the last of April and prepare the land for ensilage corn. I also raise about 30 acres of cowpeas, soy beans and sor-

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MARCH 15, 1916

Our Live Stock and Dairy Number

THE contributions for this issue were an exceptional lot, and almost every phase of this subject was discussed. That our readers are interested in live stock and dairy is a demonstrated fact. In presenting this issue we feel sure that every article will be of interest to all.

The article that we have awarded first prize, "From 'Just a Farm' to a Paying Dairy Farm," is brimful of interest. Mr. G. H. Day tells in a convincing manner just how he went about it to put his farm on a better financial basis and the methods he practiced and now employs are given. It took the dairy to bring about this change and the various steps made use of by Mr. Day will be appreciated by all.

Delaware is thought of as an immense garden and orchard. While this is true to a certain extent, there is room for live stock there, too. In the second prize article, "Pigs Pay in Delaware," Mr. F. M. Rand tells how he has made money raising pork in that state, and points out clearly what can be done. After reading this article you will be convinced that it is good practice not to depend alone on any one crop or class of farming.

"Do we keep cows or do cows keep us?" is a pertinent question. Mr. Walter Jack has discussed it from every view point, and his argument for the Babcock tester and scale is excellent.

The fourth prize goes to Mr. H. T. Trainer for his article on "The Economy of the Silo." His experience with the silo is most interesting and our readers can well profit by what he says. We thank all who contributed for this number and are sorry that we have not the room to print every article sent in.

Barn Cleaning Time

AT the first sign of spring the tidy housekeeper goes at her house cleaning with a vengeance, and the dirt flies in all directions. The practice of spring house cleaning is as old as history, and why not barn cleaning? If the house needs cleaning the barn needs it a dozen times more, for nine times out of ten the wife is a better housekeeper than the husband is a barnkeeper.

The barn should be cleaned thoroughly, especially around the stables. No better practice can be followed than giving a good coat of whitewash and disinfectant to the entire interior of the basement. The old-fashioned method of applying the whitewash with the brush was long and tedious, but with the small hand spray the labor is reduced to a minimum and it is surprising to see how much can be done in a short space of time. It goes without saying that

animals thrive better in sweet smelling quarters, free from vermin, than in others where conditions are less favorable. Spring cleaning should not stop at the barn, but should be carried to the hog pen and chicken houses as well. Now is the time to go at this, as before long field work will demand your time and attention. Spare hours are plentiful now, but will be mighty scarce in a few weeks.

Another thought in connection with spring cleaning is to rid home and farm buildings of rats and mice. Better get at that right soon, or before you know it Mr. and Mrs. Rat will have a nice large family to lunch with them in the corn crib, granary or feed bin, and later on these rats will show their youngsters how to make comfortable nests from chunks of bags, bits of blankets and possibly stuffing from the wagon seats, all, of course, at your expense. Much trouble and annoyance, to say nothing of the loss, may be averted by getting busy at once with traps, poison, "BB" shot, etc. Where there are two now there will be a dozen later. Don't put off barn cleaning another minute, but start now. Delays are dangerous.

How Much Longer?

THE struggle in Europe goes on with unabating fury. Hundreds of thousands of human lives have been wiped out and the property loss is beyond calculating. Billions of dollars have already been expended and many more will be used up before the close of this awful conflict. Conservative estimates state that the warring countries are spending \$92,000,000 a day, which is over thirty-three billion five hundred millions a year. England alone spends \$25,000,000 a day and it is given on good authority that Germany is spending no less than \$15,000,000 a day.

The loss in lives and stupendous cost is so great that the mind cannot comprehend it, and the question comes up, how long can it last? It has settled down to a war of endurance and the side whose men and money last the longer will win, but when, no one knows.

Meanwhile soldiers must eat, as well as those at home. Millions have been taken away from tilling the land to fight, and untold thousands have been called from the fields to help manufacture war munitions of every sort. The tilling of the land has been left to the women, old men and boys. War prisoners have been put to work, but, generally speaking, this class of labor is not satisfactory. The crops abroad are bound to suffer and the American farmer will be called upon again to do his part in feeding the world. We must see to it that we are prepared to do our part in helping to supply this food shortage.

An Engineering Marvel

THERE is nearing completion in New York City an engineering undertaking of gigantic proportions, which has been under way for the past several years. It is a series of tunnels and bridges connecting the states of New York and New Jersey by railroad, through New York City. When this work is fully completed, in the near future, it will be possible to travel from St. Johns, New Brunswick, Canada, to Key West, Florida without changing cars.

In the past when traveling from the New England States or from northeastern Canada to the South, it was necessary to change cars at New York City, or to be ferried across the river. Now, with the completion of the new facilities, a traveler may go right through New York without even alighting from his coach, if he so desires, and New York City, as it were, becomes a way station.

To accomplish this it was necessary to erect a massive bridge, the span of which is over 1000 feet long, over Hell Gate, a dangerous passage in East river, and two other bridges, thus connecting by rail, Long Island and the main land of New York State across two islands. This bridge carries four tracks and a dead load weight of 52,000 pounds per lineal foot, figures too large to comprehend, and the cost of its construction runs up into the millions of dollars. From Long Island City, New York City is reached through a tunnel. The route across the city is underground, then through another tunnel under the Hudson to the New Jersey shore, and from there on to Newark, Philadelphia and points south. It is estimated that the cost of making all of these improvements is over \$132,000,000 (what England spends in five days for the war). In addition to improved passenger service it affords shippers a through route from New England to the South and West.

Engineering science is progressing with leaps and bounds, but by its side stands agricultural progress. However great the advancement of other branches of science, none is more marked or of more importance to mankind than agriculture. The farmer is the backbone of the nation and it is largely due to his prosperity that huge commercial operations can be undertaken.

Feeds and Feeding

IN a recent issue of The Practical Farmer we announced that it was the purpose of the editors to devote more attention to live stock and the dairy. As a part of the plan we are greatly pleased to announce to our readers that the eminent dairy authority, Henry H. Dean, head of Dairy Husbandry at the Ontario Agricultural College and author of "Canadian Dairying," has consented to write a series of articles on Feeds and Feeding.

Prof. Dean will start with the first principles and explain the whys and wherefores in feeding in plain, ordinary language, so that no one need be bothered with technical phraseology. Where scientific terms are needed they will be explained very fully. The object of these articles is to give our readers a better insight into the all-important question of feeding and to show them how they may compute and balance rations to the best advantage from the grains and roughage they have on hand or can procure the cheapest. It will pay every one of our readers to study these articles and file them away for future reference. The first article in the series is on page 124 in this issue.

Ground Feldspar Not a Fertilizer

THERE is some little belief that ground feldspar is of value as a fertilizer. In fact, in 1907 the United States Department of Agriculture issued a bulletin on this subject, commenting on a series of experiments conducted by the department. The results reached were inconclusive and no claims were made that ground feldspar is a substitute for potash. However, the bulletin stated that this question was still open. This statement might have been construed by some of the readers to mean that the department might be favorably inclined to recommend this as a substitute for potash at some future time. We do not believe that the department had any such idea, and they advised if any were used on the farm it was to be in an experimental way only. Since the publication of this bulletin further investigations have failed to show that ground feldspar is of any general value for fertilizing purposes.

There is more or less potash in feldspar rock but it is in a highly insoluble form and is of no value to the growing plant. Plants require their food in a soluble form and unless food is furnished them that becomes soluble or available during the growth of the plant it is of no use to them. It is simply a waste of money to buy ground feldspar as a potash substitute and our readers should be warned accordingly.

Bulletin Helps for Farmers

The engineering experiment station of the Pennsylvania State College, State College, Pa., has just issued Bulletin No. 7, "Substitutes for Gasoline in Engines, Including Experiments on Water and Air Injection," by J. A. Moyer and E. N. Bates; it deals with economy tests of a gas engine using kerosene, alcohol, motor spirits and mixtures of kerosene and gasoline. It was found that a mixture of one-half kerosene and one-half gasoline (by volume) gave the best economy, while the injection of air into the manifold gave considerably better economy.

After ten years' experience with three orchards in different parts of the state, the New York Agricultural Experiment Station (Geneva, N. Y.), in Bulletin No. 406, gives several reasons why dwarf apples are not considered commercially promising.

Dr. William Frear, vice director and chemist of the Pennsylvania Experiment Station at State College, recently completed a bulletin on "Sour Soils and Liming" which has been issued as Bulletin 261 of the Pennsylvania Department of Agriculture, Harrisburg, Pa. This bulletin takes up the various forms of lime and the classification of their uses in the soil; the relations of lime and magnesia to plant life; lime and magnesia in rocks and soils; sour soils and soil acidity; liming for soil acidity; magnesia in lime-stones and lime; and ends with some practical conclusions on lime and soil acidity.

SECOND PRIZE ARTICLE

Pigs Pay in Delaware

By F. M. RAND

One who comes from a live stock country will better realize the advantages of live stock farming when living in a community where other lines predominate. The trend of people to the city and the low prices of all kinds of live stock in the early 90's caused many to turn to truck and fruit growing. It took less capital and promised quick returns.

Our journalistic farmers, that is, those who farm on paper, announced that 10 acres were enough, and several beautifully written books were written to prove it. Farms were cut up and sold at high prices to the city men who saw independence on 10 acres.

Fence laws, high prices for truck and fruit all helped this movement along for a time. The writer used to sell one quart of currants for enough to buy three pounds of mutton; quart of strawberries brought more than a dozen eggs.

Then came quick transportation, refrigerator cars, shipping associations, all tending to widen out the trucking area, until now this whole Atlantic coast region is one vast truck and fruit garden. On this eastern shore, composed of Delaware and parts of Maryland and Virginia, there are hardly any fences and scarcely any live stock is raised for sale, not even enough for the local markets.

The swing of the pendulum has now reached the point where we find a large overproduction of nearly all fruit and trucking crops whenever we have a favorable season. Many carloads of truck are left to rot on the farms and many more are shipped to the cities at a loss. Truck farming has become a gamble pure and simple.

Everywhere one hears the discussing of how we shall market our produce, and often the first syllable is omitted. At the same time, look at the prices for several years back, of beef, pork, mutton, wool, eggs, butter, milk, work horses and mules. We are now shipping long trains of produce to the cities, and one stock car loaded with western horses or mules representing more net value than the train load of produce, is brought back.

These mules are sold to the farmers who shipped the produce. Sometimes one carload of produce will pay for a mule, but often a carload will not net enough to buy a bride for the mule.

One must buy a lot of fertilizers, perform a lot of hand labor, hire a lot of pickers, buy a lot of crates, baskets, hampers, etc., do a lot of hauling, work from morning to night getting the stuff off, then pay transportation, drayage and commission. Maybe we have a bal-

ance left—often not. When we have a fat cow or veal calf to sell we notify the local butcher and he comes to the farm, pays cash and takes the animal away himself. The price obtained is easily double that of 20 years ago, and what a difference in the two plans of marketing.

Can we raise live stock here as successfully as they do in the Middle and Western States? Why not? To test Delaware conditions for hog raising the writer tried raising a few pigs in approved western style this past season. Pigs were good grade Durocs, five in number, farrowed May 11th (much too late for best results). Sow ran on rye pasture with common red clover sown in it. Sow fed two to three ears of corn twice daily, with a little wheat middlings in slop. From farrowing to weaning time, 60 days, sow and pigs ate: Middlings, \$3; corn, \$3; total grain, \$6. Some milk was fed the last three weeks. Pigs, from three weeks old, were fed through a creep. Last week sow was fed scarcely anything.

By this method sows dry up readily and pigs do not notice when weaned. Sow was taken away and pigs fed moderately on ear corn and middlings in slop. After a time a little digester tankage was added to slop. At 60 days old these pigs averaged 50 pounds each. Running on this rye and clover pasture and fed very moderately, an average sized one weighed 114 pounds at 100 days, in morning before feeding, which is the proper time to weigh live hogs.

Old corn being scarce and high, about July 15th new corn was gradually substituted, an early variety resembling Adams' Early being used. Feeding of old corn ceased after August 1st. One pig was separated to retain for brood sow. A small field had been fenced and planted to this early corn for market, and some soy beans mixed in. When the best of the ears had been gathered and sold for roasting ears the pigs were turned in, being fed nothing else except a very thin slop well salted. When the field was pretty well cleaned up the pigs were taken out, land sowed thickly to rye and the sow turned in, pigs going back to the clover field and fed new field corn twice daily, and slop of dish water, a little milk with tankage and middlings three times daily. Plenty of salt and ashes were given, also some stock tonic to aid in digesting the new corn. As corn matured it was gradually increased to full feed, but never more than would be eaten up in an hour or two.

The first two pigs were killed while on pasture; one at 175 days old dressed



Cream Fed Pigs

Are you feeding cream to the pigs? You undoubtedly are.

In the morning you feel fresh and strong; you turn your separator at full speed. At night, you're tired and don't turn quite so fast. You also stop a moment to refill the supply can; the speed slackens and some cream escapes into the skim milk.

Your separator may skim clean at full speed, but, no matter how good the machine, it will lose cream, and a lot of it, when the speed slackens. Many dairymen are losing a hundred dollars or more every year through imperfect skimming. They are feeding cream to the pigs. A marvelous but simple invention now enables you to stop this loss—stop it absolutely. The saving is clear "velvet"—more profit without added expense. You get all the cream with

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The capacity increases when you turn faster than the normal speed, so you can get through quicker when in a hurry. The large, seamless supply can is only knee-high. The entire machine is made simpler and better than ever.

Send for our new book, "Velvet for Dairymen," which fully explains how you can save the cream now going to the pigs. Also ask for our liberal free trial offer. Do it today, before you forget. Address Department 40.



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Crop Growing Without Potash

That's a question which is puzzling many a farmer these days. Crops won't grow as well without some potash and profitable crops require the necessary amount of it. But the war has made it practically impossible to buy potash at any price.

Fortunately the situation isn't as dark as it looks. There is probably enough potash stored up in the soil of your farm to last a long time and it would enable you to produce good crops, but is not available. You must know some of the ways whereby this soil potash can be partially rendered available so the plants can get at it and use it, otherwise you might as well not have it.

We have written a pamphlet treating of this subject, and we believe it will be of interest to you. It is called "Crop Growing Without Potash." Send us your name and address and we will mail you a copy free of charge.

F. S. ROYSTER GUANO CO. - - Baltimore, Md.

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Standardization means definite, proved quality, known manufacturing costs and reduced selling costs.

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To get the most for your money, buy a standardized car.

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Craftsmen in Fabrikoid, the artistic upholstery material for furniture and home decoration is sold by leading department stores.

How Many Hides Has A Cow?



THAT'S GUARANTEED
—to produce more milk than any other ration, either home mixed or purchased and do it without giving your cows constipation or undue trouble. Ready to use right out of the sack without any mixing.

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Absolutely free from adulterants and fillers. Just like the food you would mix for yourself, is a special combination of choice cottonseed meal, dried beet pulp, gluten feed, corn distillers' grains, wheat bran, wheat middlings and a little salt, that's all each ingredient weighed by automatic scales and all thoroughly mixed in huge power driven mixers, so that it is always absolutely uniform, and always good. An extra quart or two of milk daily from each cow may turn a loss into a profit. Try LARRO-FEED for more profits. Sold on "money back" plan. The decision being entirely up to you. LARRO dealers almost everywhere; write if none near you. THE LARRO FEED CO., 255 Chicago St., Detroit, Mich.

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375 lbs. in 9 months!

184 pounds, and the other, the runt of the lot, 164 pounds a few days later. The two remaining pigs were then confined in a pen, one of them weighing, when 205 days old, 312 pounds alive, and on December 10th, lacking one day of 7 months old, dressed 276 pounds. This pig gained 1.8 pounds per day from weaning time, a gain any western feeder would be proud of. The last pig, as is usually the case, did not gain much

when left alone, but on December 27th dressed 278 pounds.

No corn meal was fed at any time. With pigs coming in February and March, rye and clover pasture, early corn and soy beans to tide over July and August, we fail to see why pork cannot be produced cheaply in Delaware. We hope to operate on a larger scale next year and will report results.

Delaware.

THIRD PRIZE ARTICLE

Do We Keep Cows, or Do Cows Keep Us?

By WALTER JACK

Why are we keeping cows?

A lot of farmers would say that cows are the only things we know anything about. We can strip cows morning and night, get our checks the next month, and always have some ready money. The time has come when we have got to get down to business and find out why we are keeping "bossies." It is not because she resembles that old brindle cow that grandmother used to own, and from which she made 100 pounds of butter a year, a great feat when feeds were low, farm help \$8 per month, land worth \$10 an acre and we paid 12 per cent. interest.

Now, you and I, and every farmer, knows that we must lay aside sentiment in keeping the cow, but we don't usually do as well as we know. The thing that is up to us is to right-about-face and act. You and I know that the Babcock test and scales will show up the loafer without fear or favor. A small Babcock tester will cost somewhere around \$3.50 to \$5, and perhaps a \$5 bill will pay for both scale and tester.

It is not hard to test; there are many bulletins that completely explain every step in the operation. If you don't understand them, go to the creameryman or your cheese maker and he will show you. The first test I ever made was successful, and you can do as well as I. The cow which I declared was a skim milk producer showed up as one of the best cows in the herd. A friend of mine tells me that he applied the scale and tester to his herd. He found he had a \$150 heifer that he had offered for \$50 before testing. You and I do not want to be giving away any \$150 heifers when a little work and \$5 as insurance money will keep us right as long as we keep cows. The man who sends to the cheese factory or creamery cannot afford to keep the loafer. The city milk man, who may get from 7 to 9 cents a quart for his milk, may get away with a low producer. The man who receives 1.25 a hundred for his product, or about that for a year, cannot afford to keep a cow that does less than 8,000 or 10,000, while the average cow produces about one-third the latter figure. It would take a mighty long time to buy a farm, pay for it, keep up the house, and send the kiddies to school by milking 3000-pound cows, and the more of these cows a man milks, the greater his slavery.

You say that it is all "rot" to figure against each cow interest on investment, overhead expense, insurance. Our Ohio Station has given some valuable information on the subject of costs. They figure that it costs about \$90 to produce a heifer, bringing her up to the birth of her first calf. Wisconsin figures about \$60 as the cost of producing a 2-year-old heifer, credit being allowed for manure. If it costs \$60 or \$90 to raise a young dairy cow, why, then, are we raising two year-old \$40 heifers? The best is none too good for the poor man if he is to get anywhere, and a young man without a cent, but with training on a herd of pure-bred cattle of producing ability, told me: "Give me a herd and

it will not be long before I shall have a farm. It is not a hard job to get a herd, and while I am about it I will raise good cows."

Now supposing a farmer is milking 15 scrub cows, and his returns are \$700 or \$800 a year. He is in debt \$5000 on his farm. He must pay the interest when due, \$300 a year. If he pays \$75 taxes, and has to step out and buy two cows at \$60 each year, then when he pays feed bills which I know in some sections of the hill country in the East amount to one-half to two-thirds the milk check for the month, it does not leave the farmer enough to buy his wife a new hat, to say nothing about repairs on the barn or new farm equipment. The farmer who inherits a dairy farm does not stop to think how much interest he would have to pay each year if he had to strip out 6 per cent. each year. Then a farmer must have good stock and he must see they are profit producers.

Buildings are getting old on the farm, and the farmer must milk it out of the dairy if he is strictly a dairy farmer, and I am opposed to the idea of putting all my eggs in one basket. I thank Heaven that buildings do get old, and rot down, for many good, sensible farmers are wearing out their legs chasing around ill-arranged old barns, carrying hay, silage, and carting feed. If a barn is worth \$1000 to a farm, and the farmer spends \$60 worth of time a year in effort which would be avoided if he had a modern barn, speaking from a business point of view, the farmer had better have no barn, for the \$60 time spent is interest on \$1000. "Modern barn equipment is too rich for my blood," an acquaintance of mine told me a few days ago when I volunteered some suggestions about remodeling his old barn. Modern barn arrangement and barn equipment have come to stay. Scarcity of efficient help and greater demand and better prices for quality product demand that the dairyman must have not only producers, but a comfortable, convenient and sanitary home for his cattle. He must have equipment for the proper handling of this milk. The dairyman must become an efficiency man. The story is told of an employee of the Ford factory who lost his job. When asked the reason why, he said he had dropped his monkey wrench and when he picked it up he was sixteen cents behind.

The next step in efficient dairying, to my own satisfaction, is a milking machine. I have a farmer friend who is farming 150 acres; he is keeping 20 cows, his farm is equipped with labor saving machinery, and he is doing all his work ten months or more each year. He not only keeps cows, but sheep, poultry, hogs, raises a pair of draft horses to sell each year, and produces fruit annually. He tells me the milking machine has made him independent of hired help, and he can do all his farm work, except in haying and silo filling. Another acquaintance tells me that his milking machine handles 30 cows as



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Separators shipped from Waterloo, Kansas City, Council Bluffs, St. Paul or Chicago. **Wm. Callaway, Pres., The Wm. Callaway Co.**, 125 Railway Station, Waterloo, N.Y. Cream Separator Manufacturing Specialists

quickly as three milkers. He does the milking, his brother does the chores, and with the installation of \$200 equipment and the use of a 4-horse team the two brothers are doing the work that four men did formerly and are accomplishing it more easily.

Who would do without a silo after he has had one? The silo has cut a big slice of expense in conserving feed for the dairy cow. The manure shed is sure to become as prominent a feature of farm building equipment as the silo. According to Cornell figures, a 1000-pound cow will produce annually about \$30 worth of manure—to be exact, \$29.27. Pennsylvania has found that more than one-half the manure value of the food given the dairy cow is in the urine, and nearly two-thirds—63 per cent.—of the manure value of the excreta is in the urine. Twelve dollars and fifty cents a year are the figures given by Eccles as the loss per cow per year just because her manure and urine

are not properly conserved. This is our great problem of conservation. Sawdust and shavings may be superior as sanitary bedding material to straw, but straw cut in short lengths will absorb three times as much liquid manure as uncut straw. If the manure heap is kept compact and moist, is covered to prevent leaching, phosphorus and potassium need not be lost, while all but 10 per cent. of the nitrogen content may be conserved. Dairy farming has conserved the fertility of the land. Had the nitrogen, the phosphorus and the potassium contained in feeds given the dairy cows been entirely lost, our fathers and grandfathers would have been forced to figure costs or go out of the dairy business. If manure is conserved, not more than one-fourth of the fertilizing elements found in feeds need be removed from farms. That is why our fathers paid for their farms by keeping scrub cows; the cows yielded cash return and supplied the fertilizers.

FOURTH PRIZE ARTICLE

The Economy of the Silo

By HARRY T. TRAINER

The silo is no longer an experiment. It has passed that stage. The mistaken idea that silage was injurious to cows and made them give sour milk is no longer believed; that horses look well when wintered on it and died when put to work in the spring is disproved. On the other hand, it is easily seen that the feeding of silage cheapens the cost of production of beef, as well as butter fat; and while it is not to be fed heavily to horses, it furnishes succulence for the ration when the horse is generally idle, and its cheapness for this purpose is commendable. No one who has ever fed silage doubts the fact that the value of a given amount of corn is fully 50 per cent. greater when ensilaged than when husked and the dry fodder fed.

Personally, our experience with silage is rather brief, but it is so satisfactory and convincing that the most skeptical cannot doubt. We built a 10x30 2-piece beet yellow pine silo on the home farm in August, 1915, putting a 45-inch pit under it. We aimed to put in a first-class job throughout, and I think we have it. The base is built of good concrete a foot thick. The silo was well painted with lead and oil, roofed with green slate-surfaced roofing. The roof is round, rafters half pitch, with 12-inch hole in the center for the filling pipe. We put a window in opposite every other door, so that it is nearly as light as outdoors. It has a capacity of 53 tons and cost around \$200, counting our own labor and every small item in connection with it. We did most of the labor ourselves and enjoyed doing it.

As we stated in our article in issue of March 15, 1915, we manured what we could of a 4-acre field to fill this silo. We covered 2 1/2 acres heavily, putting 50 big loads on it. The remainder was fertilized with the wheat drill at the rate of 330 pounds per acre, and the entire field given 160 pounds of 16 per cent. acid phosphate with the corn drill when planted. The fertilizer used in the wheat drill was a 1-3-3 mixture. Excellent seed corn of the Improved White Cap was planted on May 11th and 12th. A fair stand was obtained and we got a wonderful growth of fodder, averaging about 12 feet in height and making around 70 bushels of corn per acre, in the judgment of all who saw it. We got this in the silo when well matured, having one-quarter acre left standing. As the field contained just 4 1/2 acres, we got a yield of about 12 tons per acre. We had three men in the silo tramping

it down and have had splendid ensilage. We covered the top with wet straw when finishing and had very little spoiled silage. We opened and began feeding on November 18th, having almost 30 feet of settled silage, and now have 16 feet (Feb. 13th) after feeding 8 cows from 35 to 40 pounds daily, 8 calves from 10 to 15 pounds, 15 sheep, 2 weanling colts and 3 horses 10 to 15 pounds daily.

We purchased an adjoining farm last June, having an 8x22 silo on it, and we filled it also, using 2 1/2 acres of Golden Surprise corn to fill it. This corn would run about 50 bushels per acre, but the fodder was so much smaller that it made a richer silage of very fine quality. We have fed from 125 to 150 sheep and lambs and 5 mixed cattle from this silo since December 15th, and now have 9 feet left. We have fed our breeding ewes about 1 1/2 pounds daily; will increase this to 2 1/2 or 3 pounds before lambing time. We are adding some cotton seed meal and feeding clover and timothy hay also. We feed our lambs about 1 1/2 pounds daily and good clover hay, and they are doing splendidly. We sold 20 wether lambs on January 19th that averaged 56 1/2 pounds, at 7 cents. Considering the fact that they were April lambs and never had anything but pasture until December 15th, they paid very well. We sold them in order to have sufficient room for the balance, as they were crowded. We sell no ewe lambs, as they are to be the breeding ewes of the future.

It can be readily seen that we are getting an immense feeding value from the ensilaged corn. We will have silage until along in May, when grass will be with us. Our stock is doing well and will be in better condition than last year when we fed about \$150 worth of mill feed to less stock. Our cows are milking very well on 35 to 40 pounds of silage, a few pounds clover hay and some fodder during the day when it is dry. They will not eat very much hay. The saving in this respect being considerable, probably sufficient to buy their cotton seed supplement of 1 1/2 pounds daily. If we notice a cow a little constipated we give oil meal once daily instead. We were fortunate in getting cotton seed meal at \$34 about December 1st. It is now worth \$40. By building a 10-foot addition to our cow stable and putting in stanchions at small cost, we can now keep 11 head with feeding alley in front leading to silo chute,

Which will you buy

a "Cream Thief" or a "Savings Bank" Cream Separator?



WITH great many machines or implements used on the farm it doesn't make much difference which of several makes you buy. One may give you a little better or longer service than another, but it's mostly a matter of individual preference and often it makes little difference which one you choose.

Not so with buying a cream separator, however.

There is a big difference in cream separators.

The most wasteful machine on the farm is a cheap, inferior or half worn-out cream separator.

The most profitable machine

on the farm is a

DE LAVAL
Cream Separator

A cream separator is used twice a day, 730 times a year, and if it wastes a little cream every time you use it it's a "cream thief," and an expensive machine even if you got it as a gift.

But if it skims clean to the one or two hundredths of one per cent., as thousands and thousands of tests with a Babcock Tester show the De Laval does, then it's a cream saver, and the most profitable machine or implement on the farm—a real "savings bank" for its fortunate owner.

But cleaner skimming isn't the only advantage the De Laval user enjoys. There are many others, such as longer life, easier turning, easier washing, less cost for repairs, and the better quality of De Laval cream, which, together with its cleaner skimming, make the De Laval the best as well as the most economical cream separator.

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A De Laval catalog to be had for the asking tells more fully why the De Laval is a "savings bank" cream separator, or the local De Laval agent will be glad to explain the many points of De Laval superiority. If you don't know the nearest De Laval agent, simply write the nearest De Laval main office as below.

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And the premium came not only because of the scientific construction and quality of the Saginaw Silo, but also in recognition of the work we have done in promoting silage feeding—thereby adding in no small measure to the prosperity of this country.

The merit of the Saginaw Silo, as shown by the attitude of the exposition authorities, and also the success of the Saginaw Silo in the hands of thousands of owners is one of the things that should govern you in your choice of a Silo.

You will find upon investigation, the many reasons why the Saginaw occupies first place, why it is the real Gold Medal Silo.

Would you like sweet, clean, palatable silage the year round? Would you like to get away from spoilage and the losses it brings? Would you like gold medal silage—first quality—then put your corn into a Saginaw Gold Medal Silo.

Write us for new interesting silage feeding literature. Sent you free.

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greatly improving our former way of feeding. We built the stanchions of $1\frac{1}{2} \times 2\frac{1}{2}$ hickory and they are amply strong. The cost, exclusive of labor, is about 15 cents each. Our cows have just as much room now in 3-foot stanchions as they did in 4-foot stalls, and are much cleaner. Durhams would require $3\frac{1}{2}$ feet.

Poultry relish silage very much, we find. Give them a "bushel" at noon and hear them sing. They will eat much of the finer part of it, acting as a substitute for green grass.

Summarizing, the advantages of a silo are these: The conservation of the entire corn plant, thus preventing the waste of the stalk; the convenience in feeding over fodder; the increased palatability; the succulence added to your ration, thus preventing constipation; the cheapness of silage, from \$3 to \$5 per ton; the lower cost of harvesting. It cost us 65 cents per ton this year and while we expect to lower this somewhat next year, we do not think we could have cleared our ground of corn as cheaply in any other way.

You must not expect too much of the silage; it is not a perfect feed or an "all-in-one." It is low in protein and you must add a concentrate if you expect best results at lowest cost.

Ohio.

Feeding and the Making of Balanced Rations

By H. H. DEAN, Author of "Canadian Dairying"

I.—Definitions of Terms Used in Feeding

In order that readers may understand a writer on a subject which is more or less technical, it is necessary that readers shall know the meaning of the terms used. Nothing is more annoying than to begin reading an article or book, and find, before we have gone very far, that it is filled with terms and phrases which we are unable to interpret without the use of a dictionary or glossary. Most of us are too busy to refer to a dictionary.

The first article of the series on feeding, as requested by the Editor, will define or explain terms commonly used when writing or speaking of the science of feeding. These terms may be quite familiar to a large number of readers but for fear there may be some among the wide circulation of The Practical Farmer, who are not familiar with words like "ration," "protein," "carbohydrates," etc., these will be explained.

Fortunately the two great branches of the English-family-language-tree, American and Canadian, are on neighborly terms and understand each other well. Long may this continue. It is possible to imagine a time when the branches shall have grown larger and more important than the original tree; such as we see sometimes in a forest, where the main trunk has become shattered or diseased and one or two limbs or shoots have sprung up which completely overshadow the mother tree.

FEED AND FOOD.—Many are puzzled to know, when speaking or writing, whether they should use the word feed or food. The tendency among careful speakers and writers is to use the word feed when speaking of the so-called lower animals; and to use food when referring to that which is eaten by humans or persons. The ordinary meaning of these words is anything eaten, or suitable for eating, to sustain animal life.

RATION.—The feed or food given to one animal or person in one day, or during twenty-four hours.

MAINTENANCE RATION.—The amount of

Get The Latest Modern Silage Methods. Only 10c. Tells you all there is to know about present-day silage feeding—how to build silos. Gives reliable and unbiased facts (we do not sell silos) on every silo built—home made—stave, hoop and octagonal silos—pit, brick, tile, cement, concrete silos—all modifications. Also covers every crop used for silage—41 of them. Here's an entirely new book—264 pages—better than former copies used as text books in colleges. Copyrighted November, 1914. Ten page index. We send it for 10c coin or stamps. Send for this new copy today.

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feed or food required to maintain an animal or person without increase or decrease of live weight.

BALANCED RATION.—Feeds or foods so combined as to best meet the requirements of the animal.

FODDER.—Coarse feed, such as hay, straw, silage, etc. Sometimes referred to as roughage.

CONCENTRATES.—The meals or grains fed to animals. They are usually richer in nutrients than the fodders.

NUTRIENT.—Any single substance or group of substances, such as sugar, fat and protein, capable of nourishing animals.

DIGESTION CO-EFFICIENT.—The percentage of a nutrient which is digested.

NUTRITIVE RATIO, OR ALBUMINOID RATIO.—The ratio or proportion of heat formers (carbohydrates and fats) to the muscle formers (proteids or protein) in a ration.

PROTEIN, PROTEIDS, NITROGENOUS SUBSTANCE, ALBUMINOIDS.—The substances or parts in feed or food which contain the element nitrogen and which alone are able to build muscle, and furnish the material needed to produce lean meat, casein or curd in milk, and similar compounds. The protein is the most important and expensive part of a ration. The white of an egg is almost pure protein. (Note.—The accent in protein is on the first, not the second, syllable, as so many pronounce this word.)

FAT.—The oily or waxy material extracted from foods by ether—sometimes called "ether extract." The fats produce chiefly heat in the animal body. They may also act as builders or assistants to the builders.

CARBOHYDRATES (sometimes called nitrogen-free extract). These also, are chiefly heat formers, such as sugar and starch, but probably assist in building and producing.

ASH, OR MINERAL MATTER.—That part of a feed or food which cannot be burned. It furnishes material for building bone, teeth, etc., in the animal body, and also the ash in milk.

DRY MATTER.—That material in a feed or food which remains after the water has been evaporated.

FIBRE.—The walls, or framework of plants, chiefly composed of cells and to a large extent indigestible. Their chief function in animal feeding is as filling material, though they also serve as heat producers.

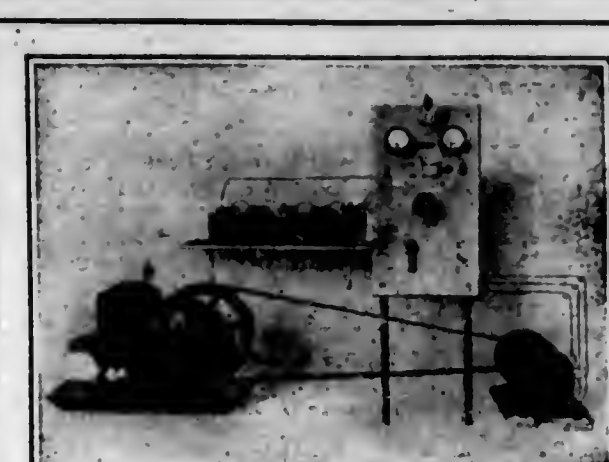
The next article will discuss the various feeding theories that have been put forward by scientific men, more particularly those for feeding dairy cows.

From "Just a Farm" to a Paying Dairy Farm

(Concluded from page 119)

this absorbent material reinforces the manure. I have a shed 75 feet from the stable for my manure spreader, and I wheel the fertilizer from the barn and dump it into the spreader by means of an inclined runway. Every day I have a load of manure to haul to the field. By the use of stable manure, raw rock phosphate, cover crops such as rye, vetch and crimson clover, lime and the disking under of cowpea and soy bean stubble I am able to build up my farm along practical and profitable lines. Where the producer can get an average price of five cents per quart for his milk under conditions where he home grows the bulk of his feed, dairying means dollars, and a surplus of them.

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I Will Prove To You

that my Stock Tonic will positively rid your live stock of worms, fatten them up and keep them in the pink of condition. I will prove to you that you will actually get more milk from your cows, that you will fatten your hogs, steers, sheep and poultry for market in less time, that you will save grain, prevent disease and make more money from each animal you own. I have such absolute faith in Wilbur's Stock Tonic that I take all the risk in this trial feeding.

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to medical science. Each one has a special purpose. A compound of these herbs, roots, etc., is absolutely sure to condition any animal—keep the blood clear—the system free from worms and disease and force the animal to put on fat rapidly. I have proved it so often there is no doubt about it. I have made and sold this Tonic for over thirty years and over a million of the best stock raisers in America are feeding it every day—I have thousands upon thousands of the finest kind of letters from all parts of the country telling me of the wonderful results from feeding this Stock Tonic. Now all I want to do is to show you that what it will do for others it will do for you. And as a special inducement just to get you to make this trial—at my risk—I am going to send you one of the handsome dinner sets shown above.

The Dinner Set Is Yours—FREE

It never costs you a cent. It's yours—forever—to keep and use every day—whether you ever pay for the trial feeding of tonic or not. It's pure white selected semi-porcelain ware with an exquisite floral decoration. It's a set that you will be proud to own—and remember—IT'S FREE.

FREE—enough Wilbur's Poultry Tonic—your guaranteed 25 producers—to offset freight charges on the shipment. It is understood that the 48 Piece Dinner Set and this call of Poultry Tonic are to be mine—Absolutely Free—whether I pay for the Stock Tonic or not.

Name..... R.F.D.....

P.O..... State.....

Freight Office..... State.....

I own.....cattle.....horses.....hogs.....sheep.....

poultry. I own.....acres of land. I rent.....acres of land. I am.....years of age.

NOTE.—This liberal offer only open to responsible farmers or stock raisers over 21 years of age.

"JOHN BAER" TOMATO

The Earliest and Best Tomato on Earth

Originator's Seed Only

Pkt. 25 & 50c. 1 oz. \$1.50. 2 oz. \$2.50. 1 lb. \$4.50. 1/2 lb. \$8. 1 lb. \$15. 2 lb. \$25.

Produces
Perfect
Solid
High Crown
Beautiful
Brilliant
Deep Red
Shipping
Tomatoes
In 30 Days

From Large
Strong
Well
Matured
Plants
In Veneer
Bands
With
Roots
Undisturbed



THE FIRST TOMATO IN JERSEY

From PHILADELPHIA RECORD, Philadelphia, Pa., June 18, 1915.

"In All Parts of Jersey"

"Fennel Cooper, of Palmyra, picked the first ripe tomatoes of the season yesterday."

"John Baer" Tomato produces the most perfect High Crown Tomatoes ever grown, entirely free from core.
—"John Baer" Tomato produces an enormous crop of Tomatoes, 50 to 100 fruit to each plant.
—"Every" "John Baer" Tomato ripens evenly, right up to the stem.
—"No" "John Baer" Tomatoes, no scalds, no blight, no cracked, no one-sided, uneven, scarred fruit. When dead ripe "John Baer" Tomatoes will not burst.
—"John Baer" Tomato has a wonderful gloss, a brilliant, bright red color.
—"John Baer" Tomato has a mild, deliciously sweet flavor. The finest flavor you have ever tasted.
—"John Baer" Tomato is almost seedless; it requires 6 to 8 bushels of "John Baer" Tomatoes to make one pound of seed, a marvelous Stem Setter, often ten fruit in first cluster, solid and meaty.
—"John Baer" Tomato has just enough foliage—will stand plenty of manuring without going to vine. Set plants 3x3 feet.
—"John Baer" Tomato is the most perfect shipping Tomato ever grown—24 fruit exactly fill a six-carrier basket.
—"Each beautiful "John Baer" Tomato weighs about 6 1/2 ounces.
—"John Baer" Tomato Seed was saved only by John Baer, the originator, who personally selected and picked every Tomato from which he saved this seed, selecting only the most beautiful, perfect fruit of the Early Stem Set Clusters.
—"John Baer" Tomato is the offspring of two marvelous Tomatoes—One Great Seedling having devoted 10 years in selecting and improving the other parent. The "John Baer" Tomato is, therefore, the result of Fifteen Generations of Improvement and Selection for earliness, quality, shape, fruit, color and shipping quality.
—"As a Packing Tomato, "John Baer" is a miracle—they all pack easily, no seconds, and all pack whole. Feelers can prepare three bushels "John Baer" Tomatoes to one bushel of any other Tomato. Being such a tremendous yielder a bushel of "John Baer" Tomatoes can be gathered in one-third the time of any other Tomato. A large Baltimore Tomato Packer had all the "John Baer" Tomatoes he could secure packed separately, running them thru a special process for his fanciest trade and his own private use.

WRITE TO-DAY FOR BEAUTIFULLY ILLUSTRATED CATALOGUE

Showing The "John Baer" Tomato in Exact Size and Color—its FREE.

J. BOLGIANO & SON, Baltimore, Md.
1818 Almost 100 years selling trustworthy seeds. 1916
Grower of Pedigreed Tomato Seed. Ellicott and Pratt Sts.

Money Makers

HERE are six special tools, every one of them money makers in the special work for which they are intended. Two-row fertilizer distributors are used to advantage ahead of potato planting—ask us how. The furrow-closing harrow protects the roots. The potato ridger not only does the ridging but helps in digging time. The other

IRON AGE

Tools shown include a Corn, Bean and Pea Planter that does all the work at once. Four Row Markers for the man with a big job to do in a hurry, and Disk Attachment for Horse Hoes. They will make money for you. Ask your dealer to show them but write us for descriptive booklets on tools you want and tell us your problem.

Bateman Mfg Co. Box 13, Grenloch, N. J.

Garden Seed Drills

Wheeled Hoes

Wheeled Hoe

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The Garden

Edited by W. F. MASSEY

Cabbage Varieties

There are a great many varieties of cabbage on the market, but, according to the Pennsylvania Experiment Station at State College, a few standard varieties will give satisfactory results for most purposes.

For early planting a good strain of Jersey Wakefield or Copenhagen Market is best. The Wakefield is slightly earlier than the Copenhagen but the latter will produce a greater tonnage per acre under identical conditions. Following these, Early Spring, Early Summer, Succession or All Head may be used.

For later planting Succession, Enkhuizen Glory and Danish Ballhead are general favorites. If seed of these be sown about the middle of May the first two varieties will mature before the Danish Ballhead. Succession and Enkhuizen Glory are excellent medium late varieties but are not as satisfactory for storage as Danish Ballhead.

Queries Answered

Storing Lettuce.—J. C. Oregon, writes: "I would like to know if there is any way of storing head lettuce? I would also like to know if there is a celery on the Golden Self-Blanching order, but larger?"

The only way to manage the fall lettuce is to put it on the market. There is no way in which lettuce heads can be stored. None of the self-blanching celeries are equal in quality to the green kinds blanched in the soil. They are usually hollow and stringy. The best celery I have seen this winter was some Giant Pascal sent me by a grower in S. E. Virginia. It was blanched in soil and was solid and as brittle as a pipe stem. If you want good celery always plant the green sorts and blanch with soil. Later in the season I will give our method of growing celery. The self-blanching celeries are pretty and showy and suit the market growers, but for home use I avoid them entirely. The Giant Pascal, Sandringham and some others are good.

Treating Potatoes.—Mrs. F. S. R. Virginia, writes: "What is the name of the preparation or chemical used on seed potatoes to prevent white maggots? Where can I procure it and how is it mixed for application?"

We treat Irish potatoes with formaldehyde to prevent scab. The chemical is mixed one pint to 20 gallons of water and the potatoes well sprinkled with this. Never knew any white maggots to be troublesome on potatoes. To destroy insects you would have to use some poison like lead arsenate, one pound to 30 gallons of water. You can get these things from any drug store.

Black Rot.—J. R. S., Texas, writes: "Where an infected crop of sweet potatoes are taken from a field, how long do the germs of black rot live in the soil? Will running water carry them? I lost over 300 bushels from this disease last year, and have it in my stored potatoes now. I treated my seed potatoes with formalin at digging time and hope to have plants free from it next spring."

The black rot germ is, as you state, carried over in the soil. This we seem to have proved definitely in our investigations in Delaware. The disease is capable of hanging over in the soil for a number of years. However, climatic conditions will favor its virulence. It seems that in the same soil, the disease will be worse some years than others. There seems no doubt but that running water would help to distribute the disease. Treating the seed with formaldehyde will not give as good results as treating them with corrosive sublimate, an ounce dissolved in 20 gallons of water, the seed potatoes being soaked for ten minutes. In treating the seed it

TOP DRESS all your

Crops with Nitrate of Soda alone, no matter what other fertilizers you may have used. 100 pounds to the acre for seeded, and 200 pounds to the acre for cultivated crops will do the work. The increase will yield large profits over the cost.

Write on post card for our money making books

WILLIAM S. MYERS, Director
25 Madison Avenue, New York

Costs You Only 3 Cents Per Acre

The KRAUS cultivator costs only 1 1/2 to 3c. per acre as compared with 5c. on the average cultivator according to government figures. These figures show you the economy of buying the KRAUS PIVOT-Axis CULTIVATOR.

A touch of the foot lever moves wheels and wheels sideways, simultaneously. Cultivates hillsides, uneven land and crooked rows as easily as a level ground. Ratchet gauge secures even depth of cultivation.

Write for free booklet which also describes the Akron Fertilizer Distributor which applies fertilizer while cultivating.

THE AKRON CULTIVATOR CO., Akron, Ohio

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Corn going to a dollar?

is also necessary to disinfect your soil. In this case formaldehyde is effective. Use one pound of formaldehyde in 20 gallons of water, watering the soil in the seedbed, at the rate of one gallon to each square foot of bed space. Growing slip seeds is also a promising way of getting rid of black rot, and rotation is the most important means of controlling it.

J. J. T.

Co-operative Marketing.—A subscriber writes: "Can you advise a newly formed group of families on how to go about forming a club for co-operative marketing?"

The inquirer does not state whether the co-operative marketing is to be that of selling produce or purchasing of commodities for the home. In either case the same general principles are involved.

In the first place, it will be necessary for the members to come together and discuss the problem before them. They must make certain that they want to form a co-operative club for the benefit of all the members, and that they will support the organization. There are too many co-operative clubs that are organized without due precaution and preparation. If the organization is for the purpose of selling their produce it will be necessary for them to form a permanent organization with proper constitution and by-laws to guide them in their work. They must elect their officers and board of directors. It may be necessary to sell shares of stock so as to raise enough capital to secure a building in which to properly pack and grade the farm produce if the plan is to sell fruits, vegetables and produce of such character. A competent man must be secured to supervise the grading and packing of the produce as well as keep a record of sales and the amount and kind of produce furnished by each person. After the club has been formed it will be the duty of every member to remain loyal to the club and give it full support, as difficulties will be encountered in the form of keen competition, both fair and unfair. No co-operative club can be a success when some of its members leave as soon as they are offered a better price for their produce by some outside concern. This practice has been the downfall of many newly formed co-operative clubs. If the club is for the purpose of purchasing their own goods the same general plan will hold true. They must secure a place in which to do business unless they can arrange to purchase the material in carload lots and take the goods direct from the cars.

In all co-operative buying and selling clubs it is well to have a small amount set aside for the purpose of providing a sinking fund that can be used in case of emergency to meet unexpected losses and expenses. The aim of the club should be to have all dividends declared on the basis of patronage rather than on the amount or number of shares owned. This will be an additional inducement for members to remain loyal. There are many details in the forming of a co-operative club that can only be discussed in a lengthy article.

W. H. T.

The total income of the people of the United States is about \$35,000,000,000 a year. Of this, \$10,000,000,000 is derived from agricultural products, \$2,500,000,000 from minerals and \$10,000,000,000 from manufactured articles.

Don't tap, drop nor pick blasting caps. Don't pull wires out of electric blasting caps.

Don't fasten a blasting cap to the fuse with your teeth nor with a knife. Use a cap crimper.

Don't store or transport blasting caps with dynamite. Keep them in a separate compartment.

DR. T. N. CARVER, in "WALLACE'S FARMER" of December 17, says: "It is not improbable that there are men now living in the corn belt who will live to see the price of corn average as high as a dollar a bushel." Corn is worth growing even at present prices. It costs 80 to 90 cts. to buy and 15 to 30 cts. to grow.

Grow your Corn with Bradley's

Grow it to feed or grow it to sell. Either way you make money. Ask us for prices and terms.

THE AMERICAN AGRICULTURAL CHEMICAL COMPANY
92 STATE STREET, BOSTON. 2 RECTOR STREET, N. Y.
ALSO BUFFALO, BALTIMORE AND PHILADELPHIA

Planet Jr. Farm and Garden

They do more thorough cultivation, quicker, cheaper, with less labor and bigger results than any similar tools. Fully guaranteed.

72-page Catalog (184 illustrations) free

describes over 70 tools, including 12 entirely new ones, and improvements to our Seeders, Wheel Hoes, Horse Hoes, Harrows, Orchard, Beet- and Pivot-wheel Riding-Cultivators. Write postal for it!

S. L. Allen & Co. Box 7711 Philadelphia No. 8

No. 8 Planet Jr. Horse Hoe and Cultivator is stronger, better-made and capable of a greater variety of work than any other cultivator made. Non-clogging steel wheel. Depth-regulator and extra-long frame make it run steady. Adjustable for both depth and width. 15 other styles—various prices.

No. 4 Planet Jr. Combined Hill and Drill Seeder, Wheel-Hoe, Cultivator

and Plow sows all garden seeds (in drills or hills), plows, opens furrows and covers them, hoes and cultivates thoroughly and easily all through the season.

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A-FARMER'S GARDEN

your convenience

Helps his wife to plan her table in busy times. Saves work and worry, saves buying so much meat, gives better satisfaction to the help. A good garden will be almost impossible in your busy life without proper tools. They cost little and save much hard work.

IRON AGE WHEEL HOES AND DRILLS

will sow, cultivate, ridge, furrow, etc., better than you can with old-fashioned tools and ten times quicker. A woman, boy or girl can do it. Can plant close and work these hand tools while the horses rest. 30 combinations from which to choose at \$2.50 to \$12. One combined tool will do all of the work. Ask your dealer to show them and write us for booklet, "Gardening With Modern Tools" Free.

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Elwood Fence

A perfect hinge joint is formed at every second cable, making an elastic, long-life fence yet sufficiently rigid to prevent sagging. Made of tough, springy steel with a thick coat of galvanizing that adds to appearance and resists weather.

American Steel Fence Posts—cheaper than wood and more durable. Last a lifetime. *Sent Free*—write for booklet on how to set posts and erect fence. Every farmer should have it.



DEALERS EVERYWHERE

AMERICAN STEEL & WIRE COMPANY
CHICAGO NEW YORK PITTSBURGH CLEVELAND DENVER

Evenly balanced long-wear Plows

Extra strong and light draft. Very simply made—easily repaired if necessary. Will not break on first stump or rock. Good suction, sticks to the ground; suitable for rough work and in any soil.

You can trust Hamburg Plows to turn the furrow all the way—no jumping or running out, but easy, steady operation. Every plow guaranteed absolutely—defective parts replaced or money back.

HAMBURG PLOWS

PARTS FOR REPAIRS—whenever you need parts for repairs to your plow, write to Hamburg Plow Works. Guaranteed to fit any standard plow—guaranteed in quality. Prompt delivery from our factory stock, right in your section. Complete information and Catalog on request. Write for it now, mentioning your dealer's name.



No. 204
Steel Beam
Straight Landside
Shin Piece.
Made in right hand
or left hand.

Burpee's Seeds Grow

The Fortieth Anniversary Edition of Burpee's Annual, the Leading American Seed Catalog for 1916, is brighter and better than ever before. It offers the greatest novelty in Sweet Peas, the unique "Fiery Cross", and other novelties in Rare Flowers and Choice Vegetables, some of which cannot be had elsewhere. This book of 182 pages tells all about proved and tested seeds. It is mailed free. A post card will do. Write today, mention this publication. W. ATLEE BURPEE & CO., Burpee Buildings, Philadelphia

158 samples of PAINT—Colors Free

Simply write a postal today. We will send you absolutely free these 158 beautiful full-color sample cards of paint for all purposes—residence, barns, floors, walls, varnishes, enamels and so on—and will quote you positively the lowest prices ever made on such fine quality, easy-spreading, long-lasting paints.

Save one-half on paint. Cut your paint cost in two. Our Big Paint Book teaches you how. Evercoat Ready Mixed Paint, guaranteed not to blister or peel, from one gallon; floor paint, guaranteed not to show best prints, \$1.00 per gallon. Equal savings on all kinds. Send today.

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Kelly's TREES

The Kind That "Make Good." True to Name—Free from Disease. Apple, Pear, Peach, Plum, Cherry and Quince Trees, also Small Fruits and Ornamentals shipped direct to your orchard as growers. Prices 25 years' experience in growing trees enable us to produce guaranteed stock at a low cost. Write for catalog. Kelly Bros., Wholesale Nurseries, 153 Main St., Danville, N.Y. You'll never regret planting Kelly Trees.

EVERBEARING STRAWBERRIES

and small fruit plants. Wonderful new sorts. Greatest bargains ever offered. Save money; make money by sending for our valuable book, "How to Succeed with Strawberries." *FREE*. Berry Cross, Box 221, Clarence, Iowa.

Horticultural

Edited by C. A. McCUE

Contact Insecticides

Insects that do not chew plant tissues, but suck out the plant juices, cannot be killed by arsenical stomach poisons, but must be handled by contact insecticides. One of the most famous of these contact insecticides is lime-sulphur which has been used so successfully for the past ten years as a remedy for attacks of San Jose scale. This insecticide, its use and method of preparation have already been given in a previous issue of The Practical Farmer. However, there are other contact insecticides that are in common use. Lime-sulphur cannot be used on trees in foliage at a strength sufficient to kill insects, hence the need of some efficient summer spray for sucking insects.

It has been known for years that tobacco had high insecticidal properties, and for nearly twenty years the smoke from burning tobacco or a decoction made from tobacco stems, has been used by the florist to rid his plants of certain greenhouse insects. A few years ago an enterprising manufacturer conceived the idea of making a concentrated nicotine for spraying purposes from the waste stems of the tobacco factories. The result was what is now known as 40 per cent. sulphate of nicotine. This sulphate of nicotine was found to have remarkable insecticidal value against many sucking insects that had long baffled all attempts of the entomologist and the horticulturist to control. Nicotine sulphate is now the standard remedy for plant lice, usually called "aphis," and the grape leaf hopper. Until this concentrated tobacco spray was put upon the market there was no real efficient practical method of handling these two pests. One of the convenient points about nicotine sulphate is that it can be used in combination with almost any other spray without impairing its efficiency or apparently changing its chemical properties. Being in a highly concentrated form it can be highly diluted and still remain efficient. Just how far this dilution can be carried on has not as yet been established. However, we know that used at the rate of one gallon in 1800 gallons of water it still has the power to control grape leaf hopper. For aphis on apple trees it is usually used at the rate of 1 gallon in 800 gallons of spray. When used alone with water it is advisable to add a pound of dissolved hard soap to each 50 gallons of spray to help out its adhesive properties. Nicotine sulphate has been one of the most recent and one of the most valuable discoveries in the control of insect pests.

The following table will give the dilutions of 40 per cent. nicotine sulphate necessary to secure a given per cent. of nicotine:

P. C. Nicotine			
.03	1 part to 1600 parts water		
.04	1 part to 1200 parts water		
.05	1 part to 800 parts water		
.06	1 part to 600 parts water		
.07	1 part to 500 parts water		
.08	1 part to 400 parts water		
.09	1 part to 300 parts water		
.10	1 part to 200 parts water		

Finely ground tobacco is sometimes used to sprinkle on plants to keep off certain plant lice. The author has often boiled up an ordinary 5-cent plug of chewing tobacco in a couple of gallons of water and used it very effectively against lice on garden plants, such as cabbage, and in the greenhouse against the ordinary green plant louse. Another common method of making a tobacco decoction is to take a pound of tobacco stems and boil them for half

HURST SPRAYERS

In these days when insect and fungus pests are ever on the increase spraying is absolutely necessary. The United States Government as well as many of the State Experiment Stations use Hurst Sprayers because of the quality and dependability of the very best.



You can depend upon the quality of our trees give abundant yields of quality fruit. Our 2,500 acres—"the world's largest nurseries"—are the result of 25 years close attention to quality as well as to quantity.

"Harrison Quality"
Is known to thousands of fruit growers, large and small, in every section. For 15 years have millions of apple, millions of peach, pear and cherry trees, thousands of other fruit trees, plants, evergreens, blooming shrubs, etc., been sent to you by Harrison Quality. Prices consistent with quality. Satisfaction guaranteed. Write us your needs. Be sure to send for our 1916 Fruit Guide—with colored plates and spraying guide. Write today. HARRISON NURSERIES, Box 54, Berlin, Md.

"Orchard Success"

Is a small pamphlet of big ideas that you should send for at once. It tells how thoroughly, quickly and cheaply you can rid your orchard of all scale, larvae, eggs and fungi. It describes "scalecide" the one great dormant spray, which mixed 1 to 15, is guaranteed to kill every scale it reaches. One barrel equals three barrels of lime sulphur and there is no spray more simple, safe or effective.

Our Free Service Department
Is for your special benefit. Question us about any orchard and garden sprays and tools. Our lifetime experience is yours for the asking. Write TODAY. B. G. Prager Co., Dept. R, 50 Church St., N. Y.

FREE FOR TESTING.

WE HAVE A FEW HUNDRED STRAWBERRY PLANTS FREE. Write for them. We have loads of big, red berries from June to November. We have a complete set of strawberry plants and buds on a single plant. A small will bring you a complete set. Also a set of the new CEREAL FEEDER to plant and grow your own corn. Also a set of the new ORIENTAL POPPY seed. Send for them. Write today. THE GARDEN NURSERY COMPANY, Box 129, Orange, Iowa.

NUT TREES

Start right with my hardy Pennsylvania grown nut trees and avoid disappointment. Hand-some catalogue free. J. F. JONES, The Nut Tree Specialist, Box P., Lancaster, Pa.

Fifty Kinds of Apple Trees

They are the kinds that bear the fruit you like to eat—and to sell, for it brings good prices. We grow our own trees, sell direct to the planter—no agents. Write for *Fraser's Tree Book*, worth money to the planter—free to you if you mention this publication. SAMUEL FRASER NURSERY, INC., 177 Main Street, Geneseo, N. Y.

Hayes Hand & Power SPRAYERS

50 STYLES, from small Hand Sprayers to the Largest High-Pressure Power Sprayers built. *FREE* book on Spraying and Spraying Catalog. Send postal today. HAYES PUMP & PLASTER CO., Box 42, SALT LAKE, UT.

TREES

ALL THE KINDS THAT DO THE BEST. Our Nursery is now open for Catalogues. Geo. A. Sweet Nursery Co., 65 Maple St., Danville, N.Y.

CALPHENE, A Soil Insecticide and general disinfectant. Destroys Worms, Snails, Beetles, Root Aphids and injurious soil bacteria. Being a powerful disinfectant, it is also a valuable material to maturity. Prices and reading matter mailed on request.

Lebanon Chemical Co., Lebanon, Pa. Agents Wanted. Commencement on initial and repeat sales.

New Strawberry

—Early, large, productive, fully described on our new catalogue along with all the best old and new sorts. Cheap. Send only \$1 per box. Joe. \$2.00 other good sorts \$2.50. SLAYMAKER & SON, WYOMING, DEL.

WANTED to hear from owner of farm or fruit ranch for sale. O. O. MATTHEW, 187 Andrus Bldg., Minneapolis, Minn.

an hour in two gallons of water, or let the stems soak in the water for several days. Strain out the liquid and apply as a spray.

CARBOLIC ACID EMULSION.

One of the handiest contact sprays for the man with a small garden is carbolic acid emulsion. It may be used against cabbage worms, root maggots and other soft bodied insects. It may be made as follows, using 1 pound of hard soap, 1 pint of crude carbolic acid and 1 gallon of hot water: Dissolve the soap in the water, add the carbolic acid while the mixture is still hot and churn the mixture until a stable, milky emulsion is formed. Use this as a stock solution, at the rate of one pint of the solution to 8 gallons of water (32 pints).

KEROSENE EMULSION.

Kerosene emulsion for a long time was the standard remedy as a summer spray against sucking insects; but it is so difficult to get a stable emulsion, and besides is a rather dangerous operation, that it seldom is used in modern spraying. The ordinary miscible oils that are found upon the market can be used instead of kerosene emulsion, being just as efficient and much more convenient to handle. Usually about 1 gallon of miscible oil to 60 or 75 gallons of water will be strong enough for plant lice. If miscible oils are used they should be applied on hot, sunny days.

Kerosene, pure, and petroleum should never be used as plant sprays. There is too much danger to foliage. There are a few pumps manufactured that are supposed to make a mechanical mixture of water of kerosene for spraying. They are unreliable and the plant or tree grower is advised against using them.

Common soap dissolved in hot water is an efficient spray against a few soft bodied insects such as cabbage worms and a few plant lice. Use one pound of hard soap to 8 gallons of water.

HYDROCYANIC ACID GAS.

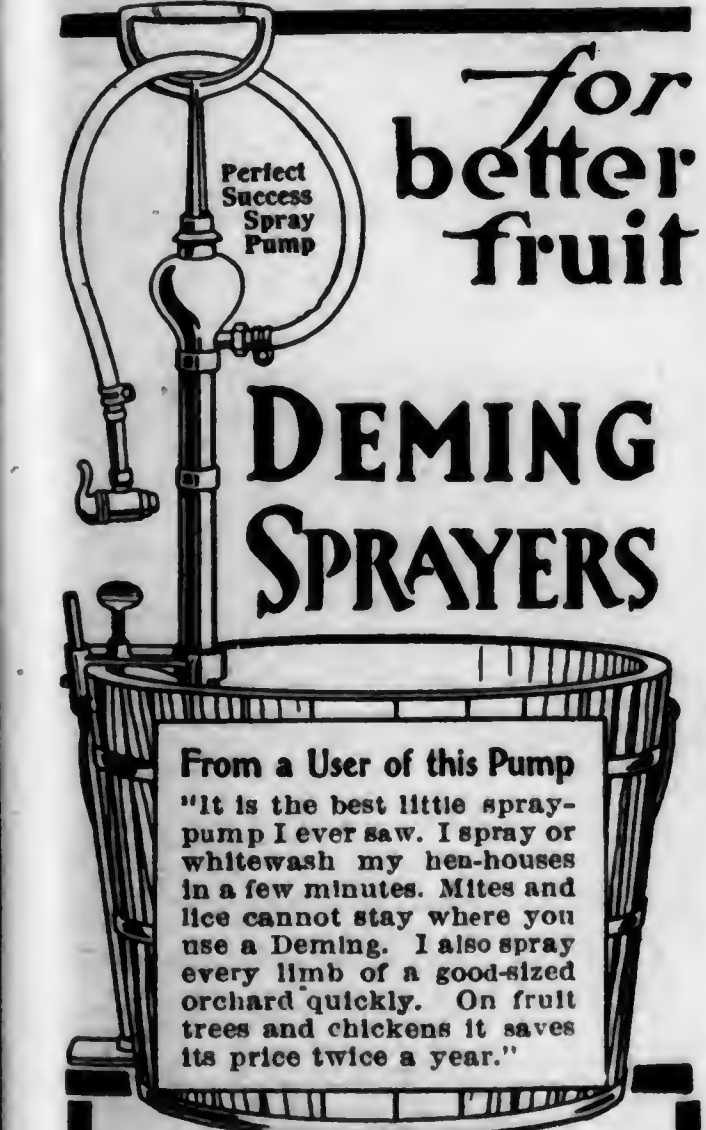
This gas is most commonly used as a fumigant for nursery stock in the dormant condition and for greenhouse work. The fumes of this gas are a deadly poison and must not be breathed even for an instant. The slightest inhalation of this gas may cause instantaneous death. Hence this gas should never be handled by an amateur. This gas is used quite extensively in fumigating citrus orchards in California, where the method of handling it safely has been highly developed.

It is usually used at the rate of one ounce of potassium cyanide and two fluid ounces of sulphuric acid, four ounces of water to 100 cubic feet of space for nursery stock and 1000 cubic feet of space in fumigating greenhouses. A common method of fumigating nursery stock is as follows. Have an airtight box containing a definite cubic feet of space. Hinge the lid so that it opens outward the whole length of the box. Inside the box arrange a small hinged shelf supported by a pin thrust under it from the outside. Place an earthenware dish containing water and sulphuric acid just under shelf. Pack in the nursery stock, leaving room for the shelf to work easily. When all is ready put the cyanide of potassium in a paper bag on the shelf, close the lid of the box, then pull the pin out that holds the shelf, thus allowing the cyanide to fall into the acid, which quickly eats through the paper liberating the cyanide. Leave the box closed for half an hour. Ventilate the box thoroughly before attempting to take out the nursery stock. Never for a moment forget that you are working with one of the most deadly poisons known to science.

Labor Savers on the Farm

LYSS HUFF.

We own and operate 100 acres of land. We have owned this land for 30 years. Not being very full-handed from the start, we have added to our stock of machinery each year, until now we have the farm fairly well equipped. We think one of the best machines we have is our 4 H. P. gas engine. It seems to be an all-around hired man always willing to work at such jobs as feed cutting and grinding, sawing wood, pumping water, turning emery wheel for grinding plow points and other tools. While we give proper regard to the mower, binder, rake and harrows, we must say something in favor of our riding cultivator. We were of the opinion that corn could be properly plowed only with a hand walking cultivator, but having added a riding cultivator to our stock last year, and having given it a thorough test, we do not see how we could get along without it now. We also remember the washing machine, clothes wringer and the kitchen cabinet. This is a great boon to the women in the kitchen. We also added to our store this year a corn snapper. This machine we pull with our engine, and it cuts our fodder into inch lengths and will husk about half of the corn and the ears are mutilated scarcely any. We can care for our fodder when we get ready, as our machine with our 4 H. P. engine will handle 200 bushels of corn per day. It will take the fodder as fast as three wagons will haul it to the machine. And now we can do our own work in two days that used to take all winter to do, thus saving us much valuable time, as well as large quantities of good feed. We regard this outfit the best piece of machinery added to our list this year. Our labor savers are making good returns on the investment.



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Salem
Ohio

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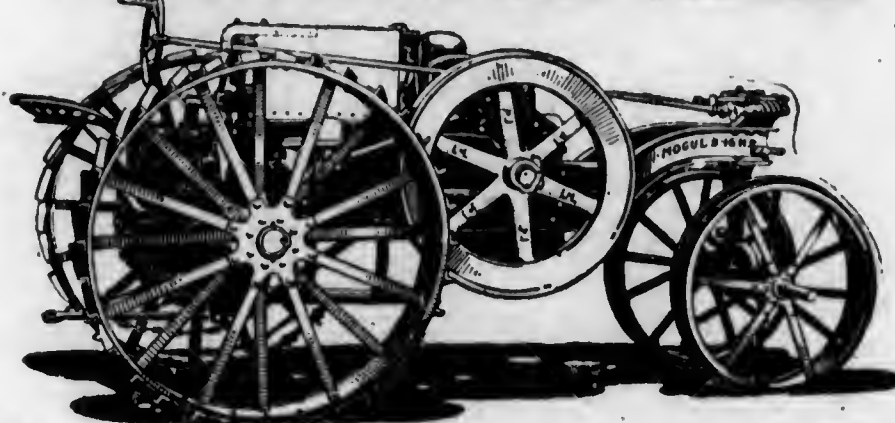
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ON and after April 1st, the price of the Mogul 8-16 tractor will be \$725 cash f. o. b. Chicago. All bona fide orders received up to April 1st will be accepted at the present price of \$675 cash f. o. b. Chicago.

We are making this announcement early so that our thousands of friends who are thinking of buying Mogul tractors will be posted on future prices.

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This readjustment of price is of minor importance compared with the wonderful saving which a Mogul 8-16 will make. It is necessary owing to the advance of prices in the raw material market. There is no change in the original policy to sell the Mogul 8-16 at the lowest possible price, always maintaining Mogul quality, but materials are almost unobtainable, even at an advance in price of from 50 to 100 per cent over prices of a few months ago.

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Yields as high as 50 bushels of wheat per acre are common. Corn yields of 45 bushels per acre are common. Thousands of American farmers have taken part in this wonderful production. Land prices are still low and free homestead lands are easily secured in good localities, convenient to churches, schools, markets, railways, etc. There is no war tax on land and no conscription. Write for illustrated pamphlet, reduced railroad rates and other information to

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Strawberry Plants \$2.00 per 1000. Catalog of 45 varieties including the Full Bravers, free. L. G. Tingle, Box 66, Pittsboro, N.C.

Soils & Field Crops

Conducted By A. E. GRANTHAM

Spring Plowing

The conditions under which spring plowing is done have much to do with moisture content of the soil during the crop season. Since water is such a large factor in the growing and the development of a crop considerable attention should be paid to any practice that may have an influence on the moisture supply of the soil. For several reasons early plowing is desirable. If the soil is turned early the land is in such condition as to take up and hold a very large per cent. of the spring rainfall. Instead of the water running off it penetrates the plowed surface and is retained by the subsoil. If the ground is not plowed until late, very often the season is dry and the turning of the soil further dries it out so that by the time the seed goes into the soil there is very little reserve moisture. Even when land is plowed early it should be partially leveled down in order that it will not dry out too quickly as the season advances. When such ground begins to dry out, even though it is not planting time it should be disked so as to prevent undue loss of moisture by evaporation.

Of course, spring plowing should not be done when the land is too wet. A sod, however, may be turned much earlier than stubble or fallow land, as the grass roots separate and enliven the soil so that it does not suffer if the ground is somewhat heavy. Land covered with a legume crop such as crimson clover or vetch should not be turned until the green crop has wide enough growth to afford considerable vegetable matter.

The mistake made in handling some of these crops is that they are often allowed to stand too long, and when turned in a light soil have such bulk that they make a cushion between the top soil and the subsoil, so that the upward movement of soil moisture is cut off and the top or turned soil often dries out too quickly. One of the best methods of handling either an old sod or a growth of a green manure crop is to disk it thoroughly with a cutaway harrow before plowing. This cuts up the sod in such a manner that the furrow when turned breaks apart so that the sod is better distributed through the surface soil. This has the effect of putting the soil in a more compact condition, so that it will hold the moisture better and promote the decay of the vegetable matter more rapidly. Fallow or stubble land may be disked very advantageously before plowing. Especially is this practice recommended where it is not possible to plow the whole field when it is in the proper condition of tilth for turning. The disking forms a mulch, so that the lands break up easily at any time even though the weather turns dry. The disking is not extra labor, as land so treated is much easier to prepare for planting than if it had not been disked.

Early plowing has the further advantage of distributing the labor so that there is no rush near planting time. The weather and the condition of the soil generally favor early plowing, as the teams will not be so easily overheated and the ground is less difficult to turn.

The spring is the time to do deeper plowing, as the corn, tomato and potato crops favor a deep seedbed. Then deeper plowing gives a greater reservoir for soil moisture. Plow half an inch deeper than you have been accustomed to; this will make for larger crops in a short time. The successful cropping season

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depends very largely upon prompt and decisive action in plowing and fitting the land so as to hold the maximum amount of moisture.

How We Grow Mangels

R. J. HOLLIDAY.

In our Poultry Number, Feb. 15th, we awarded second prize to Mr. R. J. Holliday for his article, "Mangels vs. Sprouted Oats." Since the publication of that issue we have had a great many requests asking that Mr. Holliday tell just how he grows mangels. In response to these Mr. Holliday has prepared the following article, which gives his method of procedure in detail.—The Editor.

I consider mangels, in addition to being the ideal succulent food for poultry and cattle, one of the simplest root crops to grow. The mangel is a gross feeder and will acquire size in proportion to the amount of available plant food in the soil; but what is more essential is a loose, friable condition of the soil, a soil well drained and containing plenty of humus.

A clover sod that has decayed for a year is fine, but our experience so far has been confined to heavy cover crops of rye turned under early in the spring.

Our truck land consists of soil varying from genuine muck to a black loam, and the principal portion of our mangels have been grown on the latter, the muck land having been neglected for years, and was, up to this year, water-logged and grown up to cattails and foul weeds.

Two years ago a field intended for onions, but proving, after preparation, to be a larger area than we wished to devote to that vegetable, was divided and the heavier soil sown to mangels. This field had received a heavy seeding of rye early in August of the previous year, which was turned under as deeply as possible without turning up much subsoil early in the spring.

We then disked the piece deeply, cutting up the rye sod and incorporating it with the soil. A complete high grade commercial fertilizer was then broadcast with the lime spreader at the rate of 1200 pounds per acre. One would naturally expect an enormous crop from such heavy fertilization, but the yield, while satisfactory, was not equal to this year's, which received less fertilizer but a higher proportion of phosphoric acid and was grown on a lighter soil, thoroughly underdrained and containing plenty of humus.

The preparation of the soil is identical with that for any of the root crops grown from seed, i. e., deep plowing, deep and thorough disking and harrowing and enough floating to crush the lumps and compact the seedbed.

If the crop is grown by itself the rows should be 2½ feet apart. Unless the hand seed drill has a marker of that length—and I never saw one that had—it will be necessary to lay off the rows with a hand marker, making a fine, shallow mark. However, any one possessing a potato planter can make up better rows with that machine than any way that I know of, and we use that method exclusively for all truck crops sown with a hand drill or where plants are to be transplanted. It thoroughly mixes the fertilizer with the soil, makes a deep but fine seedbed, and by using the leveling attachment on the rear of the disk covers, the surface is left as level and smooth as a floor. In case there are any large stones or sods left on the surface, which would interfere with the drill, a garden rake can be drawn lengthwise of the row as fast as a man can walk, removing any trash that would cause trouble.

This past year our mangels were located between the new asparagus rows and the rows were prepared in this manner at the same time as those for the aspara-

gus. About May 1st is the right date in this latitude—northwest corner of Pennsylvania—for sowing, and last year after the rye cover crop was turned under it received two tons of raw ground lime and 1000 pounds untreated phosphate rock per acre. These were well mixed with the soil by disking, harrowing and floating.

In making up the rows 300 pounds per acre of fertilizer was applied with the potato planter, and the seed sown at the rate of 5 pounds per acre and covered about one inch deep.

As soon as the plants are an inch or so high the double wheel hand cultivator

is run a straddle of the rows, using the scrapers or muck hoes adjusted close enough to run right up to the plants. It is advisable to follow at once with this tool fitted with the regular cultivator teeth so that a very little soil will be thrown back to the plants. These two cultivations will end the hand work, the 14-tooth horse cultivator doing perfect work until the plants are high enough to escape being buried by the regular 5-tooth cultivator.

In the meantime, as soon as the plants reach a height of 2 to 4 inches the youngsters, if you have any, must thin them out, leaving one every 10 or 12

inches. These young plants make the finest kind of greens for the table.

Deep cultivation should be the rule until about mature, when the 14-tooth cultivator will form a fine shallow mulch that will help conserve the moisture and thereby increase the size of the roots.

If the crop has been grown on a light, rich soil, the tops will practically meet between the rows and the roots will extend from one to two feet above the surface, which means one of the easiest crops to harvest which can be grown.

Before severe frosts the roots should be pulled, topped and stored either in

(Concluded on page 135)

John Deere Implements



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In addition John Deere Syracuse Plows are built with long handles, which produce steady running qualities and make the plow handle easily.

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John Deere, Moline, Illinois



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You need not spend a large share of your earnings to carry your family and your farm animals through the winter's cold. Think what it means to be able to plow during January—to only need a light fire in the house mornings and evenings to take the chill off—and to let your live stock graze green fields all winter!

So it all amounts to this: A chance not only to prolong your business life, but to live it under the most favorable conditions as to health, money-making and money-saving. This conviction took form hold of two trainloads of Eastern farmers that I personally escorted to California last fall. They saw the land, talked with the people, and experienced California for themselves.

It was not a land selling trip—it was solely for investigation. They were guests of the local communities, who provided autos and guides for demonstrating the agricultural activities of each neighborhood visited.

A Book of Pictures

taken on this trip is now ready for distribution. Let me send you a copy. It includes many views of just what you have wanted to see, also many interesting letters.

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"Experience is the best teacher." This Experience Pool is a twice-a-month Farmers' Institute for the exchange of practical ideas by practical farmers. We want them to give their experience, as well as suggest topics for future discussion. We publish this department so that all may have the benefit of the tangible, practical experience of others on every subject pertaining to the farm. Let all contribute. A cash prize of \$2.00 will be paid for the best contribution, \$1.00 for the second and \$0.50 for each other contribution published. The only condition is that you are a yearly subscriber to the paper. Write on one side of paper topics must be in our hands at least 15 days before date of publication. Do not forget to suggest ahead topics for discussion. Address all communications to "Experience Pool," The Practical Farmer, Phila., Pa.

Topic No. 1192, APRIL 1.—Have You Found It Good Practice to Roll Your Meadows? If so, How Heavy a Roller do You Use? Give Any Experience You Have Had with Top Dressing Timothy with Fertilizer in the Spring.

Topic No. 1193, APRIL 15.—Do You Plant Your Corn in Hills or in Rows, and How Far Apart? Give Your Reasons for Same.

Topic No. 1194, MAY 1.—How do You Manage a Balty Horse?

Topic No. 1191.—What Live Stock Have You Found to be the Most Profitable? Tell Briefly Your Method of Feeding and Caring for it from Birth to Maturity.

S. R. K., Delmont, Pa.—The raising of sheep has, in the past, been recognized as an important branch of the live stock industry. The outlook for the sheep breeder is even more promising than it has ever been in the past. Although dogs have in many instances caused the raising of sheep to be unprofitable it must not be inferred that there is no longer any money in the production of wool and mutton.

On account of the high price of wool, caused by the European war, there is a tendency at the present time to turn toward the wool sheep rather than toward mutton types. Ewes should be bred to drop lambs from Jan. 1st to March 1st, depending upon the conditions under which they are to be cared for. January lambs come upon the market first and usually bring the highest prices, while later lambs go on pasture at an earlier age and the cost of feed and care is lessened. All male lambs should be castrated when from two to four weeks old, and all lambs should be docked. However, both operations should not be done at the same time, but with an interval of at least one week between them.

Lambs should be given access to some palatable grain mixture and fine alfalfa hay or second crop clover when they are about two weeks old. The ewes and lambs should be turned out to pasture as soon as the grass springs up to such an extent that it will not be injured too severely by close cropping. The ewes need not be fed a concentrated feed while they are on pasture, but the lambs should have free access to some grain which will tempt their appetites. Oats, bran or corn meal will do very well for this purpose and will aid the growth and early development of the lamb.

Lambs should be weaned at about four months of age and changed to fresh pasture. A grain feed should then be fed to supplement the pasture. Nowhere does the skill of the feeder show more plainly than in getting lambs on full feed without getting one off feed. The grain ration should be increased very slowly and several weeks should elapse between placing the animals on feed and full feeding. Corn meal and alfalfa hay make a good feeding ration. The feeding period need not extend over a period of more than 100 days, and the gains during that time should be 25 to 30 pounds per head. By some breeders it is thought advisable to hold lambs overwinter and sell them as yearlings. In this section we do not deem it advisable to do this because the market seems to demand fat, plump lambs weighing less than 100 pounds.

C. W. S., Princess Anne, Md.—The steadily increasing popularity of the mule for all kinds of hauling and farm work should be a matter for serious consideration by a eastern farmer. Why should he not raise some mules? Men who use mules make some strong claims in their favor, among which are: They are harder as colts and when mature, than horses, less liable to disease; they may be put to work younger, and over-work before they are mature is not so likely to result in permanent injury; they will do as much work and as heavy work as horses considerably heavier; they do not require as much feed; they are longer lived than horses, therefore give more years of service; good mules will ordinarily sell higher than horses where mules are generally used; and they are more intelligent than horses

and will not injure themselves by over-eating or running against a fence or kicking one another.

There are many farmers who could profitably raise one or two mule colts every year. For mule raising the brood mare should be of good size and conformation, for it is the large mule that is most profitable. She should have a quiet disposition, for no one wants a fiery mule. She should have an abundance of milk so she can give the colt a good start. She should be given abundant exercise while carrying the colt, and fed a properly balanced ration and enough to keep her in good flesh but not fat. Cowpea hay and ear corn will do very well if not too much of either is given. One feed of cowpea hay per day, if it has much seed in it, will probably be enough of such rich feed. The other feed had better be of non-leguminous hay. The mare should be worked moderately up to the time of foaling, then should have two weeks rest. After the foal is born she should have water but no feed for several hours, and then very little. Her feed should be gradually increased up to the full amount. To raise a good colt the mare should not be worked hard while suckling the colt, but should be fed well on milk-making feeds. The colt should be kept on pasture when it is available, or at any rate should have a lot for exercise. Colts are apt to chase cattle and should therefore be kept to themselves as much as possible. They should be fed leguminous hay of good quality and a moderate amount of grain. Do not expect a colt to thrive on poor pasturage alone.

In training a colt, never allow it to break away. If you do, it will be difficult to hold it again. Use strong halters and harness and have enough help to hold it. Begin the training early and you will find that the mule is not as hard to train as the horse.

L. A. S., Vestal, N. Y.—From my experience with live stock I consider the hog the most profitable, and in order to grow good hogs and produce pork at a profit we must have good, healthy stock to commence with, selected from the breed to suit the man growing them, my preference being the Chester White. At farrowing time the sow is given a warm, dry, roomy pen with plenty of short or cut straw for a bed; then to prevent the sow from lying on the pigs I nail some cleats around the inside of the pen about a foot from the floor, then tack a board to the cleats. This gives the pigs a chance to get back under where the sow cannot pinch them.

After the pigs are born I feed the sow very sparingly for about three days then gradually increase the feed until she is getting all she will eat up clean. When the pigs are about two weeks old I fix a small trough so the sow cannot get to it, but accessible to the pigs at all times. In this I put skim milk and wheat middlings and in this way the pigs learn to eat before they are taken away from the sow. When the pigs are four weeks old I give them a pen by themselves, and skim milk to which I add, for the first month, a handful of calf meal for each pig to be fed, taking particular pains to see that they get all they will eat up clean. The pigs are kept on this feed until about a month before slaughtering, when they are given all the corn meal they will eat, to finish them off. This method of feeding, together with a sharp lookout for lice, good, clean pens and plenty of dry but not dusty, straw for bedding, gives me most excellent pork. These pigs can be marketed at a profit any time after six months old, but as I prefer to make the heavier pork I usually market them at about nine months, when they will dress about 300 pounds apiece. In the fall of 1914 I dressed one that tipped the scale at 339 at nine months old.

Don't use dynamite during a thunder storm.

Don't leave explosives in a wet or damp place.

How We Grow Mangels

(Concluded from page 133)

the cellar or buried in pits. We usually pull and throw into a windrow three rows at a time, topping as we pull them. The tops, as long as they will keep, are splendid cow and hog feed. The proper method, according to theory, is to twist the tops off, which is supposed to prevent early deterioration through bleeding. However, in practice, where the mangels have attained ordinary size, this is impracticable and a heavy butcher knife is more satisfactory, leaving two or three inches of the leaf stalk on the root to attain the same result.

The crop may be stored in any cellar suitable for potatoes or stacked in long piles on high ground and covered with corn stalks or straw upon which dirt is added as the cold increases until about a foot of earth covers the pile.

We have grown both the Giant Half Sugar and the Mammoth Long Red. The former, as the name implies, contains a higher percentage of sugar and is considered by some as a superior variety on that account, but in recent years we have grown the Mammoth Long Red exclusively on account of their size and out-yielding any other variety that we know of.

To sum it all up, any one who can grow a satisfactory crop of parsnips, carrots or any of the long-rooted vegetables will find that the production of mangels is an exceptionally easy proposition. The town poultryman who must depend on his garden plot for space will proceed with mangel growing exactly as he would with beets for the table.

The plants, like beets, can be started in a seedbed and transplanted, but such a course is a waste of time and energy except where but a few are desired and the plants can be secured gratis from a grower who is thinning his field.

We have been troubled only once with insect pests, and that year in August a swarm of black beetles, a variety I never saw before, nor since, appeared one day and nearly cleaned up the tops before they were noticed. Quick action with arsenate of lead and the sprayer put an end to the bugs, Pennsylvania.

Monthly Sales from Farms

For every \$100 worth of product sold from the farm, about \$12.60 are sold in October, the month of heaviest total sales; \$11.70 in November, \$10.50 in December and \$10.10 in September—in the four months, \$44.90. Smallest sales are in May and June, when the amount in each month is \$6.10 of the year's \$100.

Sales of crops alone are more concentrated in the fall months; for every \$100 worth of crops sold in a year, \$22.80 worth are sold in October, \$19.70 in November and \$10.20 in September and December, each; in the four months, \$62.90. Smallest sales (\$3.10) are in June.

Sales of live stock products are fairly evenly distributed through the year. For every \$100 worth of live stock products sold in a year \$9.60 are sold in June, the highest proportion in any month, and \$7.50 in January, the lowest.

The estimates are based upon reports made by crop correspondents of the Bureau of Crop Estimates of their actual sales in 1914, modified when necessary to make the figures typical of sales in recent years. More than 5,000 reports were tabulated. As the correspondents are representative farmers, the averages of their reports in the United States and in the larger states are probably nearly the same as the averages for all the farmers in the states.

SEED OATS—SHEAVES OF "SHADELAND CLIMAX"

These attracted extraordinary attention at recent San Francisco Exposition. A "tree" or "sprangled" oats—celebrated for their beauty and heavy yield. "Shadeland Climax" is extremely early—resists rust—has a stiff straw—great spreading heads—large, white, heavy grains—thin hull—weighs, unclipped, 47 pounds per measured bushel—yields under ideal conditions 100 bushels per acre. "Shadeland Climax" was grown in the Shadeland Valley of North Oregon—rolling to hilly—not irrigated—famous for its seed oats production. Shadeland Valley Seed Oats, when taken to any other section of the United States, carries with it vitality and strength that insures heavy production.

A. H. HOFFMAN, Inc., always on the alert for big values in farm seeds, have secured every bit of "Shadeland Climax" available and brought them to their Landisville warehouse for distribution. With all the oats grown East of the Mississippi River badly stained—musty—sprouted—mold and bin burnt—unfit to sow—it seems to be a suitable time for farmers to get a start with "Shadeland Climax."

PRICE. It cost us over \$500.00, freight, per car to bring "Shadeland Climax" from coast to coast, yet our price is only \$1.50 per bushel of 32 pounds—bags free—cash with order. No reduction for large orders. We pay the freight on shipments of 10 bushels or more to any station in Pa., Ohio, N. Y., W. Va., Va., Md., Del., N. J., Conn., Mass., R. I.

If you don't think "Shadeland Climax" Oats the prettiest you ever saw, send it back—we'll do same with your money and pay round trip freight. If these oats were not something unusual we couldn't afford to make such an offer. If we were not responsible this paper would not accept this advertisement.

Address A. H. HOFFMAN, Inc., Box "X", Landisville, Lanc. Co., Penna.

John's Corn 24c. on Bowker's

(Extract from a Private Letter)

"You may be interested to know that the corn which won in the boys' club contests for Merrimac County and the State of New Hampshire was raised at Bear Hill Farm by John R. McKerley on Stockbridge Manure. His was the largest yield per acre, between 75 and 80 bushels crib-dry shelled corn, at the lowest cost per bushel, 24 3/8¢, and he had the best sample of eighteen ears. Not bad for a poor season!"

John tells me his success was due to Bowker's Stockbridge Manure and good seed."

Have you ordered your Bowker's yet?

BOWKER FERTILIZER COMPANY
BOSTON & NEW YORK

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Tower Cultivators went into the fields three days earlier than the shovels after a rain. Earlier maturity of the corn was the result.

V. H. Peck, Hull, Ill., writes: "We can use surface cultivators after a rain three days sooner than a shovel plow and do a better job."

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Spares All Corn Roots

These Corn Roots within Five Inches of the Surface. Each of the following extensive corn farms of Illinois use 25 to 50 Tower Cultivators: Ill. Canning Co. and Hoopston Canning Co., both of Hoopston, Ill.; Iroquois Canning Co., Onarga, Ill.; Bloomington Canning Co., Bloomington, Ill.; Chenoa Canning Co., Chenoa, Ill.; LeRoy Canning Co., LeRoy, Ill.—because they have proved the best.

Many thousands of farmers of the country use the "Tower" exclusively. Nearly every grower of Seed Corn uses the Tower System because it is proved the best known. Reader, be sure your Cultivator this season has the name "TOWER" on the tongue. Write us for free literature.

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Best Hardy Perennial Seed in the World. 100% germination, \$12.50. Government tested. Absolutely guaranteed. Extremely hardy. Resists drought. Better. Have Thurston Alfalfa, Sweet Clover, Timothy, grass seed of all kinds. Ask for our latest 60-page book on growing alfalfa, clover, timothy and samples. Ask and Free. We can save you money. Write today. A. A. HEAVY SEED CO., Box 429 Columbus, Iowa



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S. C. White Leghorns. Young and Barred strains. Fine stock and great layers: none better. Eggs \$1.25, 15¢, 40¢, 100¢. Chicks, \$2 dozen, \$12, 100, delivery guaranteed.

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Single Comb White Leghorns
Baby chicks, \$10.00 per 100. Hatching eggs, \$5.00 per 100.
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Baby ducks, \$15.00 per 100. Hatching eggs, \$10.00 per 100. Write for circular. Chesterbrook Farm, Berwyn, Pa.

S. C. Reds and Black Minorcas
Winners and layers. Eggs for hatching, \$1.50 per 15. Circular Free. **RED & BLACK POULTRY FARMS, BOX 7, LAUREL, N. Y.**

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World's Greatest Layers
\$4.07 net profit per hen. One laid \$8.00. They are Barren Winners which I own. Wyandottes, Leghorns, Buff Rocks, Reds. **MORRIS FARM, R. 4, Bridgeport, Conn.**

50 BUFF LEGHORN COCKERELS OF MY best laying strain. 25 Danish White Leghorn cockerels. 25 large, vigorous birds. My pullets now laying 70%. No bucking orders for eggs and baby chicks. **ED. C. GILBERT, TULSA, N. Y.**

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Pure bred S. C. White Orpingtons, \$2.00 per 13 eggs. S. C. White Leghorns, \$1.00 per 13 eggs. Half price after June 1st. James J. Achenbach, R. 1, Wind Gap, Pa.

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Red, White Leghorns, S. C. R. I. Reds, Eggs 90 cents per 15, \$1.50 per 25, \$2.75 per 50, \$4.00 per 100. Mottled Anconas, Black Minorcas, Eggs \$1.00 per 15, \$1.75 per 25. Catalogue free. JOHN A. ROTH, Gettysburg, Pa.

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Excellent Runners. Buff Orpingtons, Buff Leghorns, R. G. FEIST, DRYDEN, N. Y.

Pneumonia
Cause, Prevention and Cure by Dr. Elmer Lee of the Health Culture Magazine. This is one of many interesting features in the March issue. Every month it is a mine of valuable information on health topics.

Health Culture, 279 St. James Bldg., New York

POULTRY

Edited by F. V. L. TURNER

All letters, inquiries and requests in reference to poultry, should be addressed to the Poultry Editor of The Practical Farmer, Philadelphia, Pa.

Feeding the Growing Flock

There is a popular belief that whatever will make eggs will make bone, muscle and flesh, in poultry. In all probability the belief is well founded. However, whether there is any foundation for the belief or not the very best poultrymen disagree on the advisability of feeding the same ration for both purposes and yet, after six weeks of age the majority of youngsters raised in this country are fed a ration until maturity very nearly identical with the ordinary laying rations used later, so far as food values go. Up to the point where the youngsters are full feathered very little change of diet is practiced—when a change for growth and development is necessary the change must be carefully and slowly made that bowel and liver troubles will not be encountered. To avoid trouble, epidemics of bowel trouble and heavy mortality, mix the growing ration in the proportions suggested and each day add a little more of this growing ration to the chick ration until the chick ration disappears; that is, if 5 lbs. of chick ration are required for one day's feeding, reduce the weight to 4½ lbs., adding ½ lb. of the growing ration, and at this rate every day until there is no chick ration in the mixture. This method may seem tedious and unnecessary, but the success attending this system is far greater than the saving of labor and the losses due to quick changes. An excellent growing ration, different in some respects from others, is composed of:

Bran 5 lbs.
Middlings 5 lbs.
Corn meal 5 lbs.
Old process oil meal ¼ lb.
Bone meal ¼ lb.
Oyster shell meal ¼ lb.
Fine beef scrap or meat meal ¼ lb.
Ground hulled oats or fine oat meal 1 lb.

Add to this ¼ lb. powdered charcoal and 1 ounce Epsom salts. When the pullets are four months old begin the taking away and adding to of the laying ration adopted for the egg season. Remember that while the chick thrived on coarse sand for grit, the growing flock needs more substantial and larger millstones to grind their food, especially so because in addition to the mash in growing season must be used cracked corn, whole wheat, each 5 lbs., whole hulled oats, 2½ lbs., and ¼ lb. each of barley, buckwheat and Kaffir corn. Should whole hulled oats not be obtainable, substitute pin head oats until the pullets are three months old, when whole oats can be given.

Free range youngsters will need less meat meal than confined birds, therefore, the raiser must closely observe the droppings, particularly in the morning in the sleeping quarters. If any decided tendency toward looseness is detected the meat and old process oil meal should be lessened in quantity. Should the looseness continue cut down about 12½ per cent. of the quantity of bran. Early spring hatched birds may contract colds and chicken pox. To guard against an epidemic of either, use lime in the drinking water, at the rate of a gill of saturated lime solution to a gallon of water if that quantity is used in one vessel. A tablespoonful will measure

the proper quantity for a quart drinking vessel. Growing mash and growing grain mixtures are ready prepared by reliable feed dealers and labor and expense can often be saved in their use. The following ration is recommended by the Missouri Poultry Experiment Station from five weeks to maturity:

Ground oats 1 part
Shorts 1 part
Wheat bran 1 part
Corn meal 1 part
Beef scraps ½ part
Bone meal ¼ part

Use this as mash in hopper, and give equal parts cracked corn and wheat in litter, all they will clean up in thirty minutes, twice each day. Fresh water and grit should be before them at all times. Free range should be provided.

The Single Comb Black Minorca as a Utility Fowl

CHAS. M. WEIKERT.

Many claims are made for different breeds, and no doubt what is claimed for them bears merit. One good thing in the poultry line is, every individual can choose whatever he or she likes or pleases. We often hear it remarked by a breeder of fancy or utility fowls that his kind is the best. I am not going to say that of the Single Comb Black Minorcas, because there is no such breed or variety as the best; all breeds are good; it is just according to our liking, but remember there are best strains in all breeds. The Single Comb Black Minorcas, you all know, belong to the Mediterranean class and are the largest of the non-sitting breeds, being at least about two pounds, heavier than their nearest competitors, and will produce as many eggs in a given time, with the right care, as their competitors—the Leghorns. At the same time the eggs will outweigh either the other breed by several ounces to the dozen. Again, good, big eggs like the Minorcas do not have to be sold at the same prices as the other eggs, for their large size will readily command a higher price. There is no doubt but what if the Minorca breeders could have their way eggs would be sold by the pound instead of the dozen.

The Single Comb Black Minorcas, in my recollection, have received no boosts like a great many other breeds, but have slowly and surely worked their way to the front. Look over your farm and poultry journals and you will find column after column, and page after page devoted to Leghorns, Wyandottes, Rocks, Orpingtons, etc., describing the merits of these breeds, but you will not find one single column devoted to the merits of the Minorca. The position the Single Comb Black Minorca holds today was attained by their own good qualities and their power to show their owner a nice profit. Within the last year I have been asked the question a great many times: "Are the S. C. Black Minorcas a success?" To which I must answer, yes. With the proper care and management, properly housed and not overcrowded, the S. C. Black Minorcas are the layers, the layers are the profit payers and the profit payers are a success. They will lay from 200 to 250 large, snow white eggs in a year. Almost any breed will lay in the spring and early

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Write for Booklet describing the Up-to-the-Minute methods of brooding with complete information about the IDEAL and MARVELL Heaters. Liberty Stove Company, 100 S. 3rd St., Phila., Pa.

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Charles William Stokes, 211 Stone Building, New York

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Our big, illustrated, 1916 Year-Book—“Profits in Poultry Keeping”—will help you make more money with fowls. Tells how to raise chicks, get more eggs and make larger profits with less work. Learn about Cyphers-Built Incubators.

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Best five varieties for profit, chicks of quality and vitality. White Wyandottes and Leghorns. You can depend on getting your money's worth from us. Hatchery eggs, Booklet free. **JOHNSON CHICK HATCHERY, Box 10, Sergeantville, New Jersey.**

Turkey and Chicken Eggs. M. Bronze, B. Reds, 7 breeds Chickens. If interested get our prices. **EASTERN OHIO POULTRY FARM, Beaverville, Ohio.**

CHICKS \$5.50 to \$6.00 per 100. Barred Rocks, White, Brown and Buff Leghorns and broilers. Safe delivery guaranteed. Circular free. **Keystone Hatchery, Box 35, Richfield, Pa.**

EGGS Black and White Langshans, Light Brahmas, B. P. Rocks, M. P. Ducks, White African Game, \$1.25 per 15 prepaid. **W. H. M. JONES, Edom, Virginia.**

15 eggs, \$1.00; 40 eggs, \$2.00; Brahmas, Rocks, Reds, Leghorns, 15 White Orpingtons, \$1.50. Catalogue free. **S. G. BEALER, Coopersburg, Pa.**

Do Away With the Truss

New Appliance invented guaranteed to retain rupture comfortably at all times
Sent on Trial

It is a well-known fact that while great improvements have been made in almost every conceivable thing to lessen the burdens of afflicted mankind everywhere, and to make the sufferer more comfortable, the undisputed fact still remains that ruptured men who are not only disfigured for work, but are also suffering untold misery and are each moment in danger of death, have been absolutely compelled to wear the same old, ungainly, cumbersome, tortuous trusses that their forefathers used in the Dark Ages.

The pad or device that is applied to the rupture is the all important feature of any mechanical arrangement for retaining rupture. Nearly all the trusses of to-day consist of a pad of wood, hard rubber, or felt attached to a band of cloth with great pads on the back which necessarily press upon and often disease parts of the body that before were in a perfectly healthy condition.

C. E. BROOKS, the inventor of the Rupture Appliance

The Brooks Appliance is fitted with an AUTOMATIC AIR-CUSHION which follows every movement of the body, always covers the ruptured spot and is always where it should be to do the most good. The part of the cushion which comes in contact with the skin is soft, pliable gum rubber. It clings closely, so that irritation and slipping is impossible, and yet it is cool and comfortable because of the constant circulation of air through it. It is simple of construction, so there is nothing to get out of order—nothing that can break.

We are selling this Appliance under a positive guarantee of money refunded if not satisfactory. We do not guarantee to cure any more than any doctor will guarantee to cure his patient. We DO guarantee to furnish a perfect fitting Appliance, one that will give the wearer solid comfort and retain the protrusion at all times and under all circumstances.

The purchaser is the sole judge of the efficiency of the Appliance, and if for any reason whatever (which does not have to be furnished us) it is returned, the price paid will be refunded in full. Thus you see it is sold strictly on its merits.

This Appliance is endorsed and adopted by thousands of physicians, and we can furnish references and recommendations in any county or city in the U. S. A. The United States War Department has purchased quantities of our Appliances for Hospital use during the past eight years, and this fact alone stands out as greater proof of its efficiency than any argument we could advance.

Further information regarding the Appliance, rules for self-measurements and catalogue sent free in sealed envelope.

BROOKS APPLIANCE CO.
1722-A State Street Marshall, Mich.

Stop Using a Truss

Do away with bands of Steel and Rubber that Chafe and Fester. You know from your own experience, the truss is a mere bandage that does not cure, but a collapsing wall and is under no mechanical-chemical, application made-adhesive purpose to prevent slipping and to hold in place. No straps, bottles or springs attached. Soft as wind—easy to apply—Inexpensive. Write today for Free Pictorial and 48-page book on ruptures absolutely FREE—nothing to pay. **PLASPO LABORATORIES INC., Box 155, St. Louis, Mo.**

TRIAL OF PLASPO

48-page book on ruptures absolutely FREE—nothing to pay. **PLASPO LABORATORIES INC., Box 155, St. Louis, Mo.**

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48-page book on ruptures absolutely FREE—nothing to pay. **PLASPO LABORATORIES INC., Box 155, St. Louis, Mo.**

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48-page book on ruptures absolutely FREE—nothing to pay. **PLASPO LABORATORIES INC., Box 155, St. Louis, Mo.**

summer when eggs are cheap, but it takes the successful hen, the hen that lays the large, snow-white eggs, the S. C. Black Minorca, to shell out the eggs when they are high in price. And now to the poultryman or woman who wishes to raise some fine fowls I will say, you will make no mistake if you choose the Single Comb Black Minorca. [This is what one of our readers thinks about Black Minorcas. Let us hear from others about their favorite breed.—The Editor.]

Secret of Poultry Raising

A farm woman recently gave me the secret of her success with poultry by saying that she carried the key to the granary says one of the farm advisers of the Department of Agriculture. Before she got a key of her own the hens did not pay.

"If more farm women had a key to the granary, more farm flocks would be profitable," says the farm adviser. "Lack of feed is more responsible for poor laying than all else. With all the grain the fowls can eat, twice a day, and a box with a dry mixture of dried beef scrap or tankage and wheat bran in equal parts, placed where the fowls can always help themselves, farm flocks will pay a profit regardless of breed or variety."

"Let the birds run out every day if they care to go out. Shut in one day and let out the next is bad practice. Birds soon learn to stay in, when they should be in, even when the door is open."

To insure freedom from lice a hen should be dusted with a good powder before she is set and at intervals of five to seven days thereafter. An odd number of eggs, from nine to fifteen, according to the size of the hen, will fit into the nest better than an even number.

Queries Answered

Geese.—E. du P. Delaware, writes: "I am about to purchase some geese for my farm and would like to know what is the largest variety. I am told that a cross between the Emden and the Toulouse produces the largest stock. Is this true? Any information you can give me on this subject I will appreciate."

We do not know of any great success in the crossing of Emden and Toulouse geese. The standard weights for ganders of either of the above varieties is 20 pounds, geese 18 pounds. The Toulouse is the more prolific of the two. Since there is no difference in weight and it is more prolific than the other a cross would not improve the Toulouse but would lessen its prolificacy.

Worth While Suggestions

The best time to put down eggs is in the season of low prices, usually April. Even May eggs, if promptly gathered and put into preservatives at once, every day, are mighty handy things to have around when the hens have joined the railroads in an embargo on every movable.

Either Ike Walton or Josh Billings said: "The best time to set a hen, is when the hen is ready to set." Not so with an incubator, though: now is it? If any poultryman has serious intentions of voting against preparedness, preserving 16-cent eggs this spring and selling them at 50 cents next election time will not cut much ice.

Turning one and a third cent eggs into four cent eggs beats growing two stalks of alfalfa where only one grew before.

Tells Why Chicks Die

E. J. Reeder, poultry expert of 4363 Reeder Bldg., Kansas City, Mo., is giving away free a new book which tells of a simple home solution that raises 98 per cent of all chicks hatched and cures white diarrhea over night. All poultry raisers should surely write for this valuable book free.—Adv.

"GUARANTEED"

IN FARMERS' Bulletin 481, the United States Department of Agriculture says:

"Many brands of Portland cement are on the market, from which the farmer should select some well-known make, guaranteed by the local dealer to meet the standard specifications for cement of the United States Government, to be obtained from the United States Bureau of Standards."



ALPHA PORTLAND CEMENT CO., Easton, Pa.

Sales Offices: New York, Philadelphia, Boston, Pittsburgh, Baltimore, Savannah

CONCRETE FOR PERMANENCE

30 DAYS FREE TRIAL



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Hill Colony Brooder \$30

Magic Brooder . . 15
If you own a poor brooder it is your loss. When buying a brooder select one that will hold the fire continuously, maintain an even temperature and not leak gas. Chicks will not thrive with gas. Buy a brooder with a perfect grate—one that will clean all the dead ash out without poking the fire from the top. The Hill Colony and Magic Brooders have no equal for quality and efficiency. We guarantee them. Will cheerfully refund the money after 30 days trial if they do not do all we claim. Write today for circulars describing same.

UNITED BROODER CO., 42 Bellevue Avenue, TRENTON, N. J.



Longer Wear for Everybody

You mothers who would lessen the disagreeable, never-ending task of darning—here's the hosiery for you. Makes no difference how hard Dad or Johnny is on his hose, Durable Durham Hosiery will give him more wear, because it is built to stand the strain.

We've made our hosiery strongest where the wear is hardest by heavily reinforcing the toes, soles and heels. Durable Durham Hosiery always keeps its shape, fits right and comes in correct sizes. The deep elastic tops are fastened to the bottoms to stay. The prices of

DURABLE DURHAM HOSIERY FOR MEN, WOMEN AND CHILDREN

are as exceptional as the wearing qualities. 10c, 12c and 15c is all they cost. We can offer you such hosiery at such a price only because of our advantageous location here where the materials grow. We are also the largest manufacturers of this class of hosiery in the world.

The United States Government buys Durable Durham Hosiery for the men who give socks hard wear. Our unlimited guarantee is your assurance of satisfactory service from Durable Durham Hosiery for everybody in the house.

DURHAM HOSIERY MILLS
Durham, North Carolina

Have the dealer show you our 25c better grade hosiery



FREE 96 Exquisite Wall Paper Samples

Write on a postal today. Get 96 samples of the most beautiful wall papers in the world. Don't select your paper until you have seen them. Send to your dealer or to the nearest Charles William Store.

38c papers a big room. This big new book tells how you can do the work yourself quickly and easily, making the paper, dining room, bedroom and bath, together, cheaper, entirely new, want to send you your. Write postal now—just say, "Send Wall Paper Book."

Charles William Stores
3111 Store Bldg., New York

Our Barter Column

This column is for our subscribers only—no Real Estate Agents, Dealers or Manufacturers. 2 cents per word; no advertisement less than 50 cents.

Terry followers wanted on a farm run to promote his teachings. Opportunities for health-seekers and students. No inebriates, several industries started. Pay in proportion to services. Agriculture, hygiene and mechanics taught. Owner left sanitarium for farm, "Incurable," in 1900. Visited Terry and followed his methods to health and renewed success at engineering. Often mentioned in "Health Hints." Now on farm again for better environment and to help others. **EVERY ANDREWS, Granville Center, Bradford Co., Pa.**

Old Age and poor health compel me to offer Forest Home Farm for sale. Rock bottom price only to prospective purchaser. Will make three good farms. I will divide to suit buyer. No agents. Buy direct. Save 25%. Come and see or write for particulars. **MARCEY J. JACOBSON, Eden, Mo.**

Seventy-five acres, 27 acres must sell, account age. \$4000 worth buildings, \$2000 worth timber wood, well fruited, watered, fenced, two good markets; price, \$1000 with personal \$1000 cash, balance suit. Box 228, Havana, N. Y.

Wanted: Single man for coming season. Grain and stock farm. Must have good habits, be experienced and efficient. Write stating price. **FISLEY HENDER, Norwalk, O.**

Wanted exchange: Ayrshire, Advance Registry stock from a herd established 22 years, for field seeds or offers. Correspondence invited. **T. TEMPLETON & SON, Uxbridge, Pa.**

Will exchange: Dahlia roots and White Muscovy duck eggs for other plants, etc. Also 75 varieties Dahlias for sale. Circular. Mrs. Howard Holsinger, Denton, Md.

\$1000 buy my 40 acre farm, 6 room dwelling. All good soil. Good water. My husband is blind, cause of selling. **MARY C. KREZDORF, R. 1, North East, Md.**

The Women's Exchange

This is the farm women's own department—for them and by them. It is devoted to the discussion of topics of everyday interest to the women of the farm family. The Practical Farmer invites—and expects—you not only to write your experiences on the topics under discussion, but also to propose topics for future discussions. The best letter published herein each issue will be awarded a prize of one dollar, and for each other letter published we will pay fifty cents. Address:

WOMEN'S DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

APRIL 1.—Give Receipt for Your Favorite Way of Preparing Hubbard, Tell How You Serve Asparagus and Give Receipt for Any Dressing You May Use.

APRIL 15.—What is Your Favorite Dish Made with Rice? Give Receipt.

MAY 1.—Tell of Anything You do to Make Wash Day Easier.

All contributions to the Exchange must reach us at least 15 days before the date of issue in which the topic is to be discussed.

Tell in Detail How You Make Butter

Mrs. H. R., New Paris, Pa.—In making butter the first step I take is to brush the cow off and see that her udder is perfectly clean before milking. After the milking is finished, while the milk is yet warm I strain into the separator and separate. The separator, churn, milk pails and all articles used in making butter I keep perfectly clean and sanitary, as cleanliness is an essential thing to the making of good butter. I never run the warm cream into the cold, but let it cool and then empty into the vessel containing the cream.

I allow my cream to stand until it has turned slightly sour, when I churn it in a churn which has been previously scalded and then rinsed with cold water. After I have my butter churned I gather it and draw off the butter milk. I then put water about the temperature of the butter milk in the churn and wash the butter. After the butter has been thoroughly washed I take it from the churn into the butter bowl, which has been scalded and then chilled with real cold water. I now work my butter with a wooden butter paddle which has been treated the same as the butter bowl. After working a while I add two large handfuls of salt to about five or six pounds of butter; if it is not salted enough I add more after the salt has been thoroughly worked through. I now work my butter until the water is all worked out of it. I never pat the butter with the butter paddle, as patting it breaks the little granules of the butter. After the butter is worked until it is as dry as it can be made I print in pound prints and make in small rolls, as some of my customers prefer the prints, while others wish the rolls. I always wrap my butter in waxed butter paper, which adds to the appearance and also tends to keep it from absorbing odors.

Mrs. L. H., Weedsport, N. Y.—Butter making on the farm seems to be a lost art, judging from the amount of poor butter on the market. To make first-class butter one must follow several well defined rules.

Our milk is run through the separator as soon as milked, giving us perfectly sweet cream which is allowed to cool before emptying in with the other cream, which is then thoroughly stirred. The cream is kept in a comparatively cool place in the winter and on ice or in running water in summer to keep it sweet until we have enough for a churning. Then it is set near the stove to ripen. In winter we warm it to 65 degrees and in summer 62 degrees is sufficient. It is then kept cool until the following day, when it is again warmed as before. Now we are ready to churn. First scald the churn well, put in cream and enough butter color to make a nice yellow color. We use a barrel churn and get butter in about half an hour. The butter milk is then drawn off and butter is washed until the butter milk is thoroughly washed out of the butter. We then weigh it and salt it, using one ounce of very fine salt to a pound of butter. It is then worked and packed in 5-pound jars and is ready for our customers.

Mrs. J. H. C., Town Line, N. Y.—This is our fifth year in New York State, and every winter until last year we had bitter milk and cream and strong fa-

vored butter as soon as the cows were taken from the pasture and stabled for the winter. Being inexperienced butter makers, we asked a neighbor what she did to secure good butter. She said: "Strain the milk into the pans in which the cream is to rise, and heat it to about 140 degrees F., or until it begins to crinkle. Keep the milk in a temperature of about 60 degrees while the cream is rising and do not let it stand over 36 hours before skimming."

We now churn twice a week, and the night previous to churning the cream is placed on the back of the stove to sour. If we feel that the cream will not be sufficiently soured by morning a cup of sour milk is added for a starter, stirring the cream frequently to insure evenness of fermentation. The cream is churned at a temperature of about 64 degrees, the butter washed several times in water of about the same temperature, salt worked in thoroughly, and after standing a few minutes is worked again and is ready for the table.

We like our butter more highly salted than the regulation proportion, an ounce of salt to the pound of butter, so we salt to our own taste. Since we have been following the above instructions we not only have excellent butter but have no bitter milk and cream, and the cottage cheese is as good in winter as when the cows have access to the green pasture in summer.

Our experience has taught us that it is not necessary to test the milk each time with a thermometer, for it is sufficiently hot to insure good butter when it begins to "crinkle." We also had trouble with the churning after the cows were put on dry feed for the winter, especially when the cows were nearing the end of lactation period, until we began feeding mangel, the amount per cow being one peck per day. Where it formerly took an hour or more to churn, the time required now is less than 20 minutes.

Miss R. E. B., Westfield, N. Y.—In making butter it is important to have all the utensils used perfectly clean and odorless, as cream will take an odor very quickly. We use a centrifugal separator, the milk being separated while it is still warm. Keep the cream in a cool place while ripening. In the summer the cellar is the best place. Three or four days in the summer and five days in the winter is as long as cream should be kept before churning. A tablespoonful of salt added to the cream during ripening, adds to the sweetness of the butter. Stir the cream often. Scald the churn with boiling water and cool with cold water. Put the cream in the churn, add butter color if needed and churn. The cream should be 62 degrees F. in summer and 65 degrees F. in winter to insure quick churning. When the cream begins to form small particles, scrape the sides of the churn with a knife so that the butter may form in a large lump. Draw off the butter milk and add fresh cold water, turn the churn a few times, draw this water off and add more fresh water. This is to clear the butter from butter milk. Remove the butter to butter bowl which has been previously scalded with boiling water and cooled with cold water. Allow a scant teaspoonful of salt to five pounds of butter, or one ounce to a pound. Work the butter well and drain off the water. Cover with a granite pan and let stand from 12 to 24 hours. Work again and pack in jars. Place a cloth which has been wet in cold water over the butter and cover with salt, sprinkling it evenly over the top, then tie with a neat paper.

J. W., Cordova, Md.—The first important fact to keep in mind in making good butter is keeping the milk and cream away from all odors, as fish fried in a room where the odor can reach a pan of milk will leave the taste of fish

that will be impossible to remove. We use a small cold water separator, as we only keep two cows. Keep cream in cool place until you have sufficient for a churning, then take two teaspoonfuls of butter milk, left from a previous churning (if in winter), stir in cream, set in a warm room and stir frequently. The cream will sour in this way without getting bitter, which is a great trouble when you have only one or two cows. When butter is churned take out into bowl which has been scalded, and cooled with cold water, wash well and salt. I use about 1 1/2 ounces of salt to two pounds of butter. Some people like more, which is a matter of taste. Work the salt into the butter and let stand for half an hour or until salt is dissolved, then work until all moisture is removed. Mold into any desired shape, or use patent print mold.

Mrs. R. L., Snow Hill, Md.—As soon as through milking, the milk is run through a separator and cream set aside to cool before adding to other cream in jar and stirred each time fresh cream is added, so it will ripen evenly. When ready to churn, in winter I add warm water to bring cream up to 65 on dairy

thermometer. In summer cold water to make cream up to 60, and I find it always helps to add water to separator cream, as it is so much thicker than the old way. It helps to separate the butter from the milk better. When cream is ready I add one teaspoonful of a good coloring to about two gallons of cream.

After butter has been churned I wash it through two waters, then press and work all water out, then salt. I never weigh or measure salt; I put about two or three handfuls to 4 or 6 pounds of butter; mix through butter and set it by until next day, then I mix and press thoroughly until all water is out, then put in 1/2-pound prints. I have no trouble getting customers; could sell more than I make.

Having heard of some women cutting the rubber that goes on the separator bowl when it gets too large, I will tell how I do. Have used a separator for a number of years and never have had to buy a rubber yet. After washing, I put it in a bowl as big around as the rubber is, and keep fresh water on it. I always wash separator after each using; never leave it unwashed for another milking to be put through.

Our Fashions and Patterns

In order that our readers may be able to keep in touch with the most practical styles for ladies, misses, and children, we have made arrangements to supply our readers with perfect fitting, seam allowing patterns at the price of 10 cents each, postage prepaid. Full directions for making, as well as the quantity of material required, accompany each pattern. When ordering all you have to do is to write your name and address in full, let us know the number and size of each pattern you want, and send 10 cents for each number. Address all orders to:

FASHION DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.



7606.—Ladies' waist. Cut in sizes 36 to 44 inches bust measure. Crepe de chine or linen may be used for this waist.

7620.—Children's rompers. Cut in sizes 2, 4, 6 and 8 years. The rompers close at the back and may have high or low neck.

7588.—Ladies' corset cover. Cut in sizes 34 to 42 inches bust measure. The corset cover is made without shoulder seams and is especially designed for embroidered flouncing.

7585.—Children's dress. Cut in sizes 2, 4 and 6 years. The dress closes at the front and the separate bloomers are attached to an underwaist.

7604.—Girls' dress. Cut in sizes 4, 6, 8, 10 and 12 years. The dress has either long or short sleeves and a 4-gored skirt.

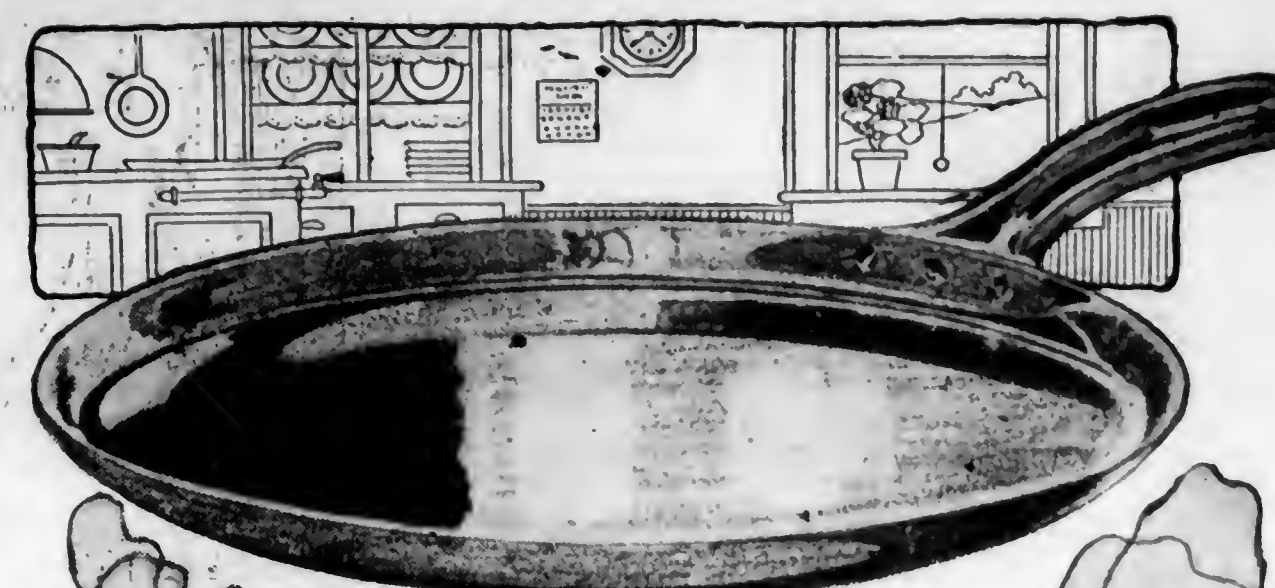
7633.—Ladies' dress. Cut in sizes 34 to 42 inches bust measure. The dress closes at the front and has a one-piece gathered skirt.

7607.—Ladies' skirt. Cut in sizes 22 to 34 inches waist measure. The skirt has four gores and closes at the left side of the front.

7621.—Misses' dress. Cut in sizes 14, 16, 18 and 20 years. This plain dress has a 3-gored skirt with a yoke top.

7602.—Ladies' skirt. Cut in sizes 22 to 34 inches waist measure. The skirt has four gores and high or regulation waist line.

7608.—Ladies' morning set. Cut in sizes 34 to 42 inches bust measure. The set consists of a one-piece middie, a 4-gored skirt and a cap.



Karo The Nation's Spread for Griddle Cakes and Waffles

FOUR hours of breakfasting from New York to San Francisco—and gold-en brown Karo being poured thick over tempting hot cakes every minute. The nation's breakfast—Karo on cakes, waffles, corn-bread and hot biscuits—in many thousands of homes, day after day. American women have also found out how Karo helps in making delicious pastries, puddings, candy—and jams and preserves that will not crystallize. Scores of welcome recipes in the free Karo Products Cook Book—send for it.

It is the custom now among thoughtful housewives to order Karo by the half dozen cases.

SPECIAL KARO PREMIUM OFFER
You can get this \$2.25 Solid Aluminum Griddle for 85 cents in stamps or money order, provided you send us at the same time labels from 50 cents worth of Karo.

We are making this special offer so that all Karo users may serve Karo on the most deliciously baked cakes that can be made. The Griddle heats uniformly over entire baking surface—cakes baked evenly. It needs no greasing. It doesn't rust—and it stays clean and bright on both sides. Get 50 cents worth of Karo from your grocer at once—Send us the labels and 85 cents in stamps or money order at once. You'll get the griddle by parcel post prepaid.

Corn Products Refining Co.
Dept. 203 New York
P. O. Box 161



Liquid Muscle

That's just what Babbitt's Pure Lye means to the housewife. Babbitt's cuts the dirt, softens it so that you can rub it off your pots and pans, your sinks, your wood-work with ease. It takes the drudgery out of daily tasks.

More than that

BABBITT'S PURE LYE

In the New Can with the Sifting Pry-Off-Top is valuable for a hundred household purposes. It keeps the drain pipes clean and odorless; softens hard water; saves you money in home-made soap. It cleanses—purifies—disinfects.

Babbitt's Pure Lye is Highest in Strength, but NOT in Price—10c Everywhere.

Send for new booklet on Lye—"How to Use It—How to Choose It."

B. T. BABBITT - NEW YORK

Does It Interest You

To know that the "EASY" Vacuum Washer took the highest award in its class at the Model Kitchen Exhibit, Panama Exposition? Does it interest you to know that the washboard is a thing of the past when you get acquainted with the "EASY"? Write us for further information before next washday comes around.

DODGE & ZUILL, 5097 E. Water Street, Syracuse, N. Y.



"Dapple" Given to Ernest

Ernest L. Heckert, of York County, Pa., saw our advertisement and sent in his name. This is the pony "Dapple," and the buggy and harness that we gave him. Ernest is driving here in the Memorial Day parade.



"Dolly" Given to George

George Edwin Adams lives in Cayuga County, New York. He sent in his name and we gave him "Dolly." George says "Dolly" is a very fast little horse and he has been offered \$150 for her.



"Pert" Given to Georgia

Georgia Spencer, of Warren County, Pa., was looking through a farm paper one day and saw our free offer. She sent her name and we gave her "Pert." She says "Pert" is as cute and gentle as a kitten and as fat and nice as can be.

All These Ponies Given Free to Boys and Girls

Read about these beautiful Shetland Ponies we have given away to boys and girls, right in your own state or near by. Besides these eight shown here, we have given away 356 others.

Now, we are going to give away several **more Ponies**—some of the finest Shetland Ponies we could buy—and we want every family that reads this paper to have an equal chance. If you are a boy or girl, send in your name, and if you are the father or mother of a boy or girl be sure to send in your child's name.

Remember, no charges of any kind and nothing to buy. Just send in your name.

Every Boy and Girl Has the Same Chance to Get a Free Pony



"Flasher" Given to Clarence

Here you see Clarence R. Morgret, of Cambria County, Pa., and his new friend "Flasher." Last summer Clarence saw one of our offers in the paper and sent in his name and we gave him "Flasher." He says he has a dandy time.



"Beppo" Given to Larue

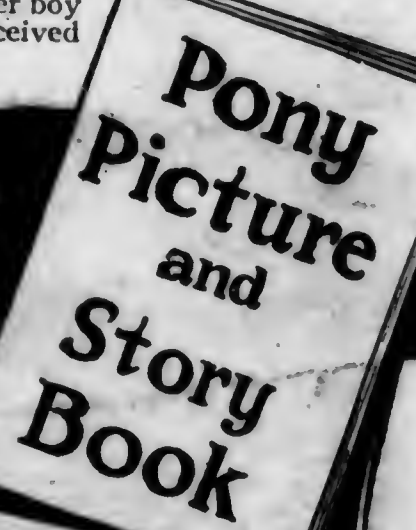
Little Larue Wertman, of Carbon County, Pa., is only 7 years old, but she saw our free offer in the paper and sent in her name. We gave her "Beppo," a beautiful black pony with white feet.



"Fluffy" Given to Robert

This is Robert Decker, Allegheny Co., Pa. He is another boy who sent in his name and received "Fluffy."

Send Your Name For This Free Book



Children—Don't put off this chance. Don't wait. Write your name and address in the corner below, cut it off and send it to us. We will then send you the beautiful free **Pony Picture Book** and you will have an equal chance to receive one of the Real Live Ponies that we are going to give away soon. You stand just the same chance as any other child, and it doesn't cost you a cent. Get a pencil and write your name now.

Parents—Please show this offer to your child and send in the coupon. You will be interested in the free **Pony Book** we send and your child will enjoy it immensely and profit by it. We receive many letters from children telling us how they enjoyed reading the book. Besides, your child may win one of the Shetland Ponies we are actually giving away this season. Your child stands the same equal chance as any other child, no matter where you live.

Address your letter to
**The Farmer's Wife
Pony Club**

604 Webb Bldg.
St. Paul, Minn.

"Mayflower" Given to William

William is having a great time with "Mayflower" who doesn't seem to mind the load in the least. William A. Barnes is his full name, and lives in Westchester Co., N. Y. He sent in his name and we shipped "Mayflower" to him.

"Toodles" Given to Durrell

This is little Durrell V. Moyer of Lehigh County, Pa. When he saw our offer in the paper he says he got terribly excited and sent in his name right away. We sent him "Toodles" and this little buggy.



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The Growing of Spring Oats

By A. E. GRANTHAM

Agronomist, Delaware Experiment Station

SPRING oats occupy a place in the rotation on the general farm that does not conflict with other crops. For this reason oats are widely grown in regions where they fail to return as large profits as the other field crops in the rotation. At the time oats are sown there is little else to do, and since they are harvested after the wheat and hay crops the labor is so distributed as to allow all of the crops their due share of attention. The oats crop is grown by comparatively simple methods. This, together with the fact that it is apparently less particular in the kind of soil or preparation than most crops, and that it does not respond so quickly to fertilizers as other cereals, are reasons why oats are grown by extensive rather than intensive methods.

Oats do best in a rather humid climate, since more water is required to grow oats than any other common grain crop. Stubble ground after oats is generally drier than wheat stubble when it is plowed, which indicates the heavy requirement of the former crop for moisture. The failure of clover to withstand the hot sun after the oats nurse crop has been removed is due to the same cause, the lack of moisture.

In a favorable climate oats do well on all productive soils. The fact that oats require more moisture than other grain crops and often suffer from lack of water indicates that the crop may be expected to do best on rather heavy, retentive soils. Clay and clay loam soils are best adapted to oats for the above reasons. Spring oats can hardly be expected to produce a profitable crop on sandy soils. Many soils a little too wet for good corn growing produce excellent oats. This does not mean that a poorly drained soil is better adapted to oats than to wheat or barley. Very rich soil is not the best for oats, as the crop is likely to lodge and fail to fill well. Oats do not seem as sensitive to available plant food or to careful soil preparation as does wheat. Thus it appears that a fairly good crop of oats can often be grown on soil that has refused to produce good wheat. All cereals do well on new or virgin soil, but oats appear to produce fairly well after wheat and barley begin to diminish in yield. For example, in New York State where climatic conditions are fairly favorable to oats, they are sown on nearly any tillable land, while the more fertile land is reserved for wheat. A careful study of the requirements of oats seems to indicate that a favorable climate, namely, one with sufficient moisture, together with a slow ripening season, is more important for high yield in oats than the character of the soil.

ROTATIONS FOR OATS.

Oats generally follow corn in the rotation of crops. In the Northern and New England States the potato crop is often followed by oats. In a large part of the country where the climatic conditions are favorable to oats a five-year rotation is planned, as follows: First year, corn; second year, oats; third year, wheat; fourth year, clover and timothy; fifth year, timothy. In this rotation the manure is applied on the sod for corn. If any fertilizers are used they go on the wheat. This plan, of course, is applicable to those lands that

are in a fair state of productiveness. Where corn and wheat are not raised, the rotation may be: First year, potatoes; second year, oats; third year, grass. Generally, very satisfactory yields of oats are secured in this rotation, and splendid crops of hay.

PREPARATION OF THE SEEDBED.

Far less attention is paid to the preparation of the seedbed for oats than for wheat or corn. Particularly is this true in the Middle West where the loam soils predominate and where the fertility is not depleted. The state experiment stations in that section have shown that practically as good results have been secured with oats when the corn stalk land is prepared by disking as when plowed and thoroughly fitted. On the heavier soils in the Eastern States it has been found that plowing has given better results than disking, particularly where the soil is rather thin. However, on soils in a fair state of fertility, the disking will probably give as good results as more complete preparation. Since oats follow culti-

cultivated crop of potatoes has been removed it is doubtful whether fertilizers can be applied with much profit to oats. As has been stated, the corn belt states do not fertilize the oats crop directly. It is in the Eastern and Northern States where fertilizers for oats seem to pay. On lands rich in organic matter an application of 200 to 300 pounds per acre of a fertilizer containing 3 per cent. nitrogen, 8 per cent. phosphoric acid and 5 per cent. potash. Where the soil is deficient in organic matter it would be well to use as much as 4 per cent. nitrogen in the fertilizer. Most of this should be in a directly available form, since the oats crop has such a short season of growth. A 4-6-6 mixture has often been used to good advantage. This season on account of the shortage of potash a moderate coating of stable manure, about 5 tons per acre, might be disked in with good results. Fertilizers are the more important in oats growing where clover and timothy accompany the crop.

PREPARING SEED OATS.

It is a common notion that oats "run out" and that it is necessary to buy seed from a distance each year. Where the climate is at all adapted to oats the grain produced is a very satisfactory source of seed, and good results will be obtained if the oats are carefully graded. A good variety of oats may be grown for many years if care is taken to keep it pure. The seed should be cleaned and graded each year. The small grains, or "pin" oats, do not produce as strong plants as the larger grains. Yet the grading should not be too close, as experiments have shown that the very careful selection of the largest kernels does not increase the yield proportionately to the labor involved. Running the oats through the fanning mill once to remove the chaff, very small grains and weed seeds will probably be ample. It is very important to remove all inert matter such as broken weed stems and weed seeds.

TREATING OATS FOR SMUT.

The loose smut of oats is prevalent wherever the crop is grown. The spores of the fungus are carried about by the wind and find lodgment on the grains of sound oats. In this way the smut spores are carried over from one year to another. The smut may be prevented by treating the seed oats with formalin, 40 per cent. strength. Use one pound (one pint) of formalin to 40 gallons of water. Spread out the oats on a floor or a tight wagon box. Apply the formalin solution with a sprinkling pot, shoveling over the oats at the same time until all are thoroughly wet. Scoop the oats into a pile and cover with wet sacks for several hours. Time is required for the fumes of the formalin to thoroughly penetrate the smut spores. The oats are now ready to spread out to dry. Ordinarily it will require one gallon of solution to one bushel of oats. The formalin may be purchased at most drug stores.

TIME OF SEEDING.

As climatic conditions have much influence on oats production (especially are a moist soil and cool weather required) it is necessary to sow as early as possible

(Concluded on page 151)

Where a heavy sod supplemented by a good dressing of stable manure is turned for corn, or where a highly

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APRIL 1, 1916

Go Slow on Water

IT sometimes seems a thankless—and perhaps useless—task to thwart the many different endeavors to get something for nothing from the National Government by some of the piratical interests which permanently roost in Washington for no other purpose. Failures in Congress and presidential vetoes, as well as opposition in the public press, seem to have no effect on these predatory gentlemen who are out for public plunder on a large or small scale. And they sometimes succeed in their plundering schemes after adverse action has nipped in the bud some pretty little scheme, through the assumption by the public that they have been permanently squelched by such adverse action. These public plunderers, however, are never squelched, and a knockout blow in Congress, or a presidential veto scarcely feazes them. Like Tennyson's brook, they "go on forever."

One of the latest manifestations of this get-something-for-nothing spirit crops out in a piece of legislation that has secured a favorable start in Washington. We refer to the Shields bill, which has passed the Senate and is now before the House of Representatives for action. This bill apparently proposes to give to some corporation, without compensation, the use of water power on certain navigable streams, and without proper restrictions as to use. Bills very similar were vetoed by President Roosevelt and President Taft. The very fact that only a presidential veto on two occasions stood between the people's interest and those of corporations, shows how careless Congress is in being generous with other people's property. The fact that a private corporation proposes to enter upon public and privately owned land, exercising the same rights in that direction as the Government itself possesses, seems to awaken no interest on the part of many of the persons who by hook or crook, slip into a congressional seat at Washington.

The fact is that a large amount of valuable water power has been turned over to corporations, without any adequate compensation or restriction as to the use of these water powers or the time in which they should be developed and made useful. While this cannot now be helped, it ought to serve as a reminder that such legislation should be "taboo" in the future. And that no grant of water power should be made hereafter without proper compensation, security for its proper development and use in the interest of the public, and a time limit in which such development should be commenced and finished.

No grant of water power should be made to a person or corporation to be held indefinitely for future

development and use. If its value lies in the future, it should be conserved for the public, and the public have the benefit of the increment which time and the progress of the surrounding country bring.

The Shields bill should be killed in the House of Representatives or the White House, and public sentiment should be strong enough and insistent enough to make such future legislation impossible.

This is another national stable door, which ought to be locked before all the remainder of the contents of that particular stable are stolen or lost.

The Demand for Horses

IT is said that during the past two years this country has shipped something like 700,000 horses to Europe on account of the war. This would seem to account to a very considerable extent for the increased price of horses, but an interesting feature which is not accounted for by the European war, is the fact that draft horses are bringing very high prices, whereas a very small number only of that type of horse has been sent to Europe.

The State Breeders Association of Pennsylvania has recently been making some careful investigations of the horse situation in a number of leading cities and has developed some interesting facts. In the city of Pittsburgh there are about as many horses in use today as there were ten years ago; in Boston the association found that the same condition exists, but in Baltimore it was found that there are more horses in use today than there were ten years ago; in New York City today there are about 114,000 horses in use; there are no previous records with which to compare this in New York, but presumably the number is fully as large as it was ten years ago. In all four of the cities named, however, it develops that there is a wide difference in the class of horses used today as compared with ten years ago; carriage teams and single drivers have entirely, or almost entirely, disappeared, but the decline in the number of horses of these types has fully and in some cases more than been made up for by the increase in draft horses employed. At the same time it is evident that the increase in the number of draft horses has not kept pace with the increase in business because we find that the use of gasoline and electric-driven trucks has increased enormously. Still we find that the demand for good draft horses in practically every city in the country is strong and the price tendency is upward.

All of this would suggest that while there is a good market for horses, and good money in breeding them, the farmers should look well to the type of horses they breed. While today there is a market for all sorts of good horses, conditions will be somewhat changed with the end of the war and it would seem that the preponderance of demand will be for the high grade farm and general draft horses, and that while prices will remain high for pure-bred horses of this type, there will be small market for the nondescript kind and for some other breeds. Farmers will do well to look carefully to the character of the sires and to the care given their young stock. Don't be fooled by the fact that the war's demand on this country's stock of horses has presented a market at home for almost any kind of a horse that is left; by the time the colts of today have grown to maturity the war is likely to be over and then farmers will find that unless their young horses are of good blood and have been well cared for there will be small market for them at any price.

The War and Advancing Costs

WE peace-loving people here in America have come to think of the European war as something horrible, but something which cannot affect us unless the United States shall be dragged into the war. This is a happy, peaceful feeling, and is especially comfortable in view of the fact that we farmers and business men are getting increased prices for many of our products due to the decreased production in European lands and the special needs of the countries at war. A war like the one now being fought across the water, however, is far-reaching in its effects—which, in fact, encircle the globe, and not one of us can remain untouched thereby.

Many of us are only just beginning to understand that while we may be able to get increased prices for our products we have got to pay increased prices (some of them tremendously increased) for the articles we need in our homes and in the pursuit of our

business. We who publish papers are feeling the effects of the war in the scarcity of paper and the enormously increased prices of this necessary part of our business—nor is it confined to paper alone, but type metal, printers' ink—in fact, everything that goes into the making of our publications costs a great deal more than before, and is hard to obtain. You farmers who run automobiles are feeling the war in the increased price of gasoline; you are feeling it in the practical unobtainability of potash for fertilizers, and you are going to feel it in the advancing prices of agricultural implements, home supplies, building materials, and, in fact, nearly everything that enters into your daily life.

The danger is that when our American manufacturers and merchants increase the prices of their goods to us we are apt to feel that we are being imposed upon and that these same manufacturers and merchants are taking advantage of the situation to make enormous profits in their dealings with us. In the vast majority of cases this is not so. These manufacturers and merchants can no more help the increase in prices on their productions than can you. Due to the far-reaching effects of the war, steel, iron, chemicals, oil, leather, cloth, dyes, in fact, nearly every raw product that enters into the manufacture of their goods is costing more than they have ever paid for the same materials before and they must advance the prices of their finished goods in order to keep their business going. Prices are up today, and they are going up still farther. Our advice is to look ahead and supply now every need that you will probably feel during the coming spring and summer in the pursuit of your daily business. If prices are high today they will be higher still in the coming weeks and months. You can save money, therefore, by anticipating your needs and getting in ahead of some of the price advances.

Our Cover

WE believe that our readers will almost unanimously admire the cover on this issue of The Practical Farmer and will recognize in the portrait thereon a noble and trusted friend. Probably all of us have had some unpleasant experiences with dogs, but dogs are a good deal like people—we have had some unpleasant experiences with some people, too. There are good dogs and bad dogs, just as there are good people and bad people, and in dogs, as amongst people, there is no truer saying than that "Blood will tell." It is a fact, of course, that good men have grown from poor stock, but that does not alter the fact that the chances are against the person born of poor blood and that a majority of children so born fall in their growth to rise above their ancestry; just so a mongrel dog may prove a good dog, as many a farmer can testify from his own experience, but the chances are against the mongrel just as they are in the human race. Pure blood in people and dogs may go wrong, but the chances are in favor of the better born all the same.

Amongst all the breeds of dogs, there is none better fitted to the farmers purposes than the "collie;" he is intelligent, companionable, handy in a host of ways and handsome. He can be taught to drive home your cattle, tend your sheep, fetch and carry, and help you in many ways about the farm. He will prove a companion to you in your lonely work out in the fields and he will guard your home and children when they need his attention. He will prove a good friend and a loyal, staunch ally for his whole lifetime. No farm is complete without a good dog, and when you are buying, we recommend the "collie," and especially the pure-blooded "collie;" he may cost you a little more in the beginning, but good blood is a good investment every time, and you will live to appreciate this fact in the good qualities and faithfulness which your pure-blooded collie will develop.

Bulletin Helps for Farmers

Bulletin 164, published by the Massachusetts Agricultural Experiment Station, Amherst, Mass., is full of interest to every farmer raising stock. Part 1 is on "Substitutes for Milk in the Rearing of Dairy Calves." Part 2 is on "The Cost of Rearing a Dairy Cow."

Farmers' Bulletin No. 698, on "Duck Raising," issued by the U. S. Department of Agriculture, Washington, D. C., will be found very helpful to all interested in the raising of ducks.

Planting and Care of the Apple Orchard

By E. C. BRINER

Select a well drained location. Never plant trees on wet, undrained land. Whether sloped to the north or south or level makes little difference if other conditions are favorable. Any ground that will grow good corn or clover will grow fruit trees. Select and plant the varieties you know do well in your locality. Plant new, untried varieties sparingly unless you can be assured they do well under conditions similar to your own. If you plant for home use or local sale plant enough varieties so you have a succession from early to the latest of good keeping varieties. If you plant for commercial uses plant enough to attract buyers, and not too many varieties.

Spring planting is the best in the North. In the warmer climate fall planting may be preferred. Plow the land. Make large holes with shovel and hoe, or dynamite (the writer prefers dynamite) every 30 to 40 feet, either in the square or diagonal, as suits your fancy. Plant in early spring. Buy your trees from a nursery that insures or guarantees varieties true to name. Use only good, thrifty trees. Good one-year trees are the best. They are cheaper and you can form the head at any distance from the ground. Low headed trees are now considered the best by many growers, for many reasons. Thirty inches from the ground is a good distance. Always prevent the exposure of the roots to the air and sun as much as possible. Trim all mashed and bruised roots with a sharp knife to sound wood. Cut off all the wood above where you want to form the head. Make the hole deeper and larger than necessary. Fill up the hole with fine, good soil so that when the tree is set it will be a little deeper than it stood in the nursery. Fill up with good, fine soil among the roots, being sure there are no air spaces left. Fill up enough to cover all the roots, leaving a cup around the base of the tree, into which pour 2 quarts or more of water. When the water has disappeared fill up full and tramp very lightly. Finish by hilling up some. If you can afford it, apply bone meal or good fertilizer in the soil around the tree. Planting this way, very few trees will fail to grow, no matter how severe a drought may follow.

After trees begin to grow, do not let the head form with less than three limbs or branches. Some prefer more. Rub off all branches in excess. Cultivate frequently to kill weeds and increase the growth of the tree. Before growth starts the following spring cut back the branches 40 to 70 per cent. of the first summer's growth. Watch the growth and complete the formation of the head. The head may be formed by letting five to seven branches grow, evenly distributed around the tree in a symmetrical form. Rub off all branches not needed. A careful grower will see his orchard often and spare no pains or labor for the best success of his trees. Keep up constant cultivation. Root crops may be grown. If manure or chemical fertilizers are used the trees will get the benefit and grow more vigorously. The cultivation of the crop will also serve the trees and the proceeds will help to defray the expense of growing the trees.

Spraying may not be an actual necessity, but if done will destroy many insects and secure better growth. Not much pruning is required for a few years, except to keep the leading branches back to secure a more evenly balanced top. Branches interfering with each other also need to be removed. Prevent all

injuries to trees while working in the orchard with teams. If you are troubled with mice or rabbits, protect your trees. Using veneers is a cheap and successful method. The more chemical manures are used the faster the trees grow, and if properly pruned the earlier the trees will bear.

After the trees bear, cultivation seems to be the best method to follow, although various methods are advocated. The practice of growing legume crops is very beneficial. For this purpose crimson clover is the best if the location is favorable to this plant. If not, then there are plenty others adapted to the various climates and soils. Turn these under in the early part of summer. Add phosphoric acid and potash. Repeat every year or as often as necessary to keep the trees in bearing condition.

Spraying fruit is now an absolute necessity. Spray for San Jose and other scales while trees are dormant. Spray for scab and other fungous diseases before buds burst. Spray for the codling moth when petals have mostly fallen off. Spray again in several weeks to aid in the work. Spray again late in July or August for fungous diseases causing rot before and after picking. This treatment will give you smooth, sound, clean fruit of high color and flavor. Use the various spray materials recommended by the proper authorities. Keep properly posted. Love the work. Spare no pains to do your best. Thin the fruit so the trees can bear the load and mature large apples.

Picking is next in order. For best results make several pickings. In this work you cannot be too careful. The old-fashioned way of picking into bags is obsolete and should not be practiced any longer. There are specially prepared bags made and used extensively. The writer uses baskets. Some use baskets lined with canvas to prevent bruising of the fruit. The more carefully apples are handled and the sooner they are stored the better. Cold storage is the best. Where this is not practical store where you can keep the most even temperature possible.

Grading should be done before storing, as best suits the market in which you expect to sell the fruit. If you sell in closed packages grade honestly, so the fruit averages the same through the package. The Pennsylvania growers need a law similar to New York State, which goes a long way to insure honest packing. Sell when apples are ready to use. Don't sell winter apples early in the fall, when out of season, thereby lessening their quality, some of which do not have any to spare.

Besides practicing all the foregoing, watch your trees constantly for diseases, harmful insects, etc. Remove all water sprouts and unnecessary wood. Keep your trees within bounds. Keep low enough to easily reach the highest points with spray material. Remove all blighted parts when noticed.

To capture the markets of the state, for Pennsylvania fruits, all that is needed is closer attention to the appearance of the package, as the quality of the fruit is already established.

The level of prices paid producers of the United States for the principal crops increased about 8.4 per cent. during January; in the past eight years the price level increased about 3.2 per cent. during January, according to the United States Department of Agriculture.



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This book weighs nearly four pounds, but we gladly pay the postage on it. Five immense buildings—the original 11-story building; the six-story building added during the first year; the five-story and eight-story buildings added during our second year; and the great 16-story concrete building added this year, the tallest concrete building in the world—it takes all these buildings together to house the stocks of merchandise carried by the Charles William Stores, but this new book sets them all before you in your own home.

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Dibble's Russet

the best main crop white potato yielded right here in Western New York last year over 300 bushels per acre, where other kinds were a failure. One of our customers sold over 1,200 bushels from 4 acres for \$1,320.00, where crops on adjoining farms using home grown seed produced less than 75 bushels per acre.

This advertisement is written for the benefit of those farmers who through blight or disease last year lost their crop and must buy new seed and Dibble's Russet is the kind to plant on your farm if you want to grow the best potato you ever grew.

Dibble's Russet is the best potato we ever grew on the Dibble Farms outyielding other varieties grown alongside around 100 bushels per acre. We introduced Dibble's Russet four years ago and have sold over 30,000 barrels direct to our customers over 1,000 of whom have written us—"Russets were the best variety we ever grew," over 100—"They were blight and scab proof" and over 50—"They outyielded other varieties grown alongside over two to one."

Dibble's Russet grow a strong, magnificent spreading vine, foliage dark green and more blight resistant than any other variety in cultivation. The tubers are round to oblong, netted skin, pure white flesh of the most excellent quality. One of our customers sold a car load to a leading New York Restaurant, then a second and finally a third at 10c. per bushel above the highest New York City prices.

At this writing we have in store

10,000 Bushels

of choice, medium sized tubers saved from fields that were

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A Crop Worth Harvesting

THE GARDEN

All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

Edited by W. F. MASSEY

Early Spring Garden Notes

Down here in the sunny southeastern corner of Maryland, the latter half of March and the first of April gives us a chance to do a little more in the open garden than our friends northward. We can usually get our earliest corn planted, though often after it is up I have to get out early in the morning with the hose and cold water and wash the hoar frost off it. I have often done this and never lost a plant.

But for this earliest planting I use the Norfolk Market corn, a great improvement on the old Adams Early, for sugar corn planted so early is apt to rot in the ground, and I plant the early sugar corn in April. Our friends north have the advantage of us in this, for the extra early varieties of sweet corn do not do well here, though we always plant a little for an early bite after the Norfolk corn. This Norfolk Market corn is really a very early Dent, and would make an excellent field corn in the North where the season is short.

The early beets should now be planted in all parts of our range. Mine have been sown some time. I find that when we get the early beets in the rough leaf before being caught by frost, they will then stand a good deal of frost.

Those growing early beets for market will, of course, plant the Egyptian or the Eclipse, as both are early and have nice tops for bunching. For home use I prefer the old sweet Early Bassano, though it is light in color and has too big a top for bunching. Its quality is the best.

Down here the early Irish potato crop is in the ground, and by this time is above ground in the lower end of this peninsula. The chances are that this year the truckers will recoup their losses on last year's crop. A year ago I did all in my power to warn the southern growers not to plant heavily of Irish potatoes, for the northern markets were overloaded with old potatoes and the prospect was bad. I have had many letters this winter from growers, saying that they would have saved money by taking my advice.

About the last of March or early April I risk a row or two of string beans, sowing the Black Valentine. This is not the highest quality, but stands more cold than any bean I know of. Then after they are up, and frost threatens, I take my little garden plow and throw a furrow over them and uncover after the cold passes, and I have saved them in this way.

Tomato plants that were started early in the greenhouse or the hothed will now be strong enough to set in the cold frames to get stout and harden off for the open ground. Where only single glazed sashes are used it will be essential to have mats ready to cover the glass on cold nights. I use double glazed sashes on frames well banked outside and no frost gets through.

Then I give the plants all the air and exposure possible, for so long as the stems are a lively green the plants are too tender. I like to expose them so that the stems put on a dark purplish color, for when they are in that state it takes quite a frost to hurt them. Then, too, with these I take some risk in setting out early, say, here, the middle of April; I always keep a reserve in the frames in case of accident. As to the setting and after treatment I will write in

April, for most of our readers will not get them out until in May.

Then as to spinach. My spinach, which was sown the first of October, has wintered well and has had a top dressing of fine raw bone meal and is in good shape for use. Some make a spring sowing of spinach, and this is well in a more northern section where the fall sown plants may not have wintered well. But here I find that the fall sown plants keep growing and do not run to seed any sooner than the spring sown and hence I never sow spinach in the spring.

From Philadelphia north, and some distance south, now is the time to sow seed of parsnips and salsify. Here I sow later, for the salsify in our warm, sandy soil and earlier climate is apt to run to seed in late summer if sown too early, and the parsnips get overgrown and woody. These, like beets, do better with heavy applications of commercial fertilizer than with fresh applications of stable manure, which is apt to make them grow forked. Where the manure is applied as I apply it, in the fall, it is not so bad.

Where the asparagus bed had a heavy coat of manure in the late fall it should now be dug in, and the coming shoots will be greatly helped by an application of nitrate of soda on the rows before any stalks show. Cutting will be starting here, and in April in the climate of Philadelphia.

Cabbage plants that were grown in frames should now be fully exposed, to get them tough and ready to set, and the setting should not be delayed after the soil is in condition to work. Where plants of the fall sown seeds were set in November they should now be cultivated and some nitrate of soda worked in along the rows.

Between the plants in the rows of early cabbages, the root cuttings of horse radish can now be planted. Then, after the cabbages are cut, you can cultivate and fertilize the horse radish and have a fine crop of roots in the fall. Always treat this crop as an annual crop, for the roots left in the ground another year will get comparatively worthless. Trim the roots when dug, and save the side roots for planting in spring.

Our early pees are growing finely, but some of our friends may not have planted yet. A good strain of the Alaska type is best for the earliest. Then sow in the home garden Sutton's Excelsior, Thomas Laxton and, for late use, Champion of England, to be trained on chicken wire netting. For the main crop of string beans Burpee's Green Pod Stringless is best, and for wax beans Wardwell and Celestial. This last is one of the longest and most persistent bearers. For the main crop of sweet corn the Country Gentleman and Stowell Evergreen are still as good as any. Last summer I found that Kendall Giant was excellent for late use. Hollow Crown parsnip and Sandwich Island salsify are best.

Leek seed can now be sown on an open border to make plants for setting in July after some early crop, of which I will write later. Onion sets can, of course, be planted and seed of the New England varieties, such as the Southport and Danvers Globe, can be sown to make ripe onions. Onion seed for making sets should not be sown until mid-April.

Potato Varieties

It has been the history of every other staple crop that the fewer the varieties grown the more easily are they marketed. The pioneer fruit grower in America tried to grow as large a list of varieties as he could afford to purchase, while today the tendency is to reduce the list to the least number that can be depended upon to meet the market requirements. The reason for this is that it has been found a much easier task to sell large quantities of one variety than an equal quantity made up of a large number of varieties. It is believed that the same principle applies to the potato crop.

In a recent publication by the U. S. Department of Agriculture, Bulletin No. 16, a system of classification of potatoes is presented in which the leading commercial types are referred to 11 groups, and a list of the varieties studied which are thought to belong to each group is furnished. In many cases the varieties listed in each group are so nearly identical that in the opinion of the author of this bulletin there is no justification for the retention of more than 10 per cent. of them.

The commercial grower should determine what group or class of potatoes is best adapted to his climatic and soil conditions, and then confine his efforts to not more than one or two varieties within that group. In this way it will be possible for him to become more familiar with the behavior of the variety he is growing; to recognize its special cultural requirements, and to offer for sale a much more uniform and high grade product than where he is dissipating his energies on a dozen or more varieties.

The potato growers of some of our Middle West States, particularly those of Wisconsin, are being strongly urged by their potato specialists and state associations to adopt the community plan of growing potatoes of one, or, at the most, two varieties. In this way the buyer can be assured of securing a uniform stock, in carload lots, of Green Mountain, Rural New Yorker, or other classes of potatoes.

The movement must come from the grower through confining his efforts to a few varieties, preferably not more than one or two. These should be selected intelligently, with reference to soil and climatic conditions. For example, the Green Mountain group is particularly well adapted to the cooler and moister sections of the United States. The Rural New Yorker, while succeeding under similar conditions, is also able to produce satisfactory crops where air and soil temperatures are higher, and where the summer precipitation is scant, provided moisture is abundant in September and October. The Irish Cobbler group, consisting of early varieties, is at its best in the North, but also produces well when planted as an early truck crop in the South.

The size of the seedsmen's lists is very largely, if not entirely, governed by the grower, and the remedy lies wholly with him. The efforts of the potato grower, dealer and seedsmen should be directed as follows:

1. Reduce the variety list to a few standard and commercial varieties.
2. Standardize these by careful selection and culture.
3. Adopt the community plan of growing but one or two varieties and advertise this fact to the public.
4. Demand a higher grade seed potato from your seed grower or dealer, but in so doing be willing to pay a correspondingly better price for it.

Queries Answered

Sundry Queries.—W. M. Pennsylvania, writes: "If I use chicken manure for my garden, what can I use to topdress it with? I use sifted ashes on the droppings-boards, and get enough droppings to manure my garden, but I am afraid to use it without first asking a few questions. I have a loose soil with a good drainage, with an eastern slope. Can I use sheep manure for a top dressing? If not, what can I use with the chicken manure, or don't it need a dressing? When is the proper time to plant dill so as to have it when the late pickles come? Last year I planted it when the ground was warm enough and when fall came it had all dried away and was not fit to use."

If you use wood ashes on your droppings-board you have probably damaged the manure, as the lime in wood ashes will volatilize the ammonia and it will escape in the air. Coal ashes are all right. The value of the manure depends on the proportion of ashes. Better mix acid phosphate with the manure, about one-third acid phosphate and two-thirds hen manure. If you have plenty of the hen manure use it liberally and you will need no top dressing. I have never had much result from the dried sheep manure in the open ground. If plants need quickening, side-dress with nitrate of soda at the rate of 100 lbs. per acre. Dill is a biennial plant, completing its growth in two years. It is easily grown from seed, and properly cared for should live over winter.

About Melons.—J. M. New Jersey, writes: "When do you plant your watermelons and muskmelons and how do you keep the bugs and blight away?"

Our large growers of muskmelons and watermelons here prepare their land in December or January. For muskmelons they run out furrows 5 feet apart and fill them half full of manure and let it lie all winter to rot. Then at planting time in April they add 500 pounds of a good fertilizer per acre on the manure and bed on it with a furrow from each side. Flatten the ridge thus made and sow the seed in a row. After a stand is had they thin out to two plants 2 feet apart, and scatter a tablespoonful of nitrate of soda around each hill. Watermelons are checked out 8x8 feet and half a bushel of manure put in each check and at planting time a handful of fertilizer is mixed in the manure and the hill made up and planted. We plant here in April and if you had told me where you live in New Jersey I could better say when you should plant. But plant after danger of frost is over.

Asparagus Query.—Mrs. J. E. writes: "How often should asparagus be replanted?"

So long as the asparagus is heavily manured and well cultivated there is rarely any need for renewal. I have cut the finest of asparagus from a bed over 25 years old. If the plants get too thick it is sometimes well to cut out some and give the rest more room. Many years ago I took charge of a garden in which was a block of asparagus that had gotten so thick that the whole soil was covered with shoots and they were rather slender. I cut out trenches both ways a foot or more apart, leaving square blocks with roots in them. Then after removing all the roots taken out in cutting the trenches, I mixed the soil with rotten manure and filled trenches with this. The next spring the asparagus shot up like stumps in a pine thicket and I never saw stouter shoots made.

If you will take some empty flour barrels and turn them over each hill of rhubarb and then pack hot manure all around and between them you will soon get barrels full of finely blanched rhubarb stalks.

"For the Land's Sake use Bowker's fertilizers; they enrich the earth and those who till it."—Ado.



PRINCE ALBERT

the national joy smoke

makes you want to fire up your old jimmy pipe!

Copyright 1914 by R. J. Reynolds Tobacco Co.

PRINCE ALBERT tobacco throws open the gates to every man fond of a pipe or a makin's cigarette—it's so friendly! Just makes smoke joy possible for all degrees of tender tongues and tastes! The patented process cuts out bite and parch! And you can't get better proof than the fact that Prince Albert is today smoked not only throughout the United States, but all over the world!

First thing you do next, locate that old jimmy pipe or the makin's papers; invest 5c or 10c for a supply of P. A. And fall to like you are on the right track. For Prince Albert is better than the kindest word we ever have said about it. And you'll find that's a fact!



You can buy Prince Albert everywhere in the tippy red bag, 5c; or the tidy red tin, 10c; in pound or half-pound tins, 25c; or in the handsome crystal-glass pound humidifier with sponge-moistener top that keeps P. A. fit-as-a-thoroughbred!

On the reverse side of this tidy red tin you will read "Process Patented July 30th, 1907," which has made three men smoke pipes where one smoked before!

R. J. REYNOLDS TOBACCO CO., Winston-Salem, N. C.

Planet Jr. Seeder and Cultivator

plants and cultivates in half the time

It takes drudgery out of garden work, and gets bigger, better crops besides. Fully guaranteed. This No. 4 Planet Jr. Combined Hill and Drill Seeder, Wheel-Hoe, Cultivator and Plow pays for itself in a single season and lasts a lifetime. Sows all garden seeds (in drills or hills), plows, opens furrows and covers them, hoes and cultivates easily and thoroughly all through the season. 30 other seeders and wheel hoes—various prices.

New 72-page Catalog (134 illustrations) free! Describes over 70 tools, including 12 entirely new ones, and improvements to our Seeders, Wheel-Hoes, Harrows, Orchard and Beet-Cultivators. Write postal for it today! **S. L. Allen & Co. Box 1711 Philadelphia** "patch" or the largest market garden you can't afford to work without a Planet Jr.

A FARMER'S GARDEN

Helps his wife to plan her table in hour time. Saves work and worry, saves buying so much meat, gives better satisfaction to the help. A good garden will be almost impossible in your busy life without proper tools. They cost little and save much hard work.

IRON AGE WHEEL HOES AND DRILLS

will sow, cultivate, ridge, furrow, etc., better than you can with old-fashioned tools and ten times quicker. A woman, boy or girl can do it. Can plant close and work these hard tools while the horses rest. 38 combinations from which to choose at \$1.50 to \$12. One combined tool will do all of the work. Ask your dealer to show them and write us for booklet, "Gardening With Modern Tools" Free.

BATEMAN MFG CO. Box 13 Greenwich, N. J.

Frost-Proof Cabbage Plants

STOUT AND STOCKY Grown in Piedmont, North Carolina. Years of growing cabbage taught me to sow seed to prevent shooting to seed. Heads two weeks earlier than plants from warmer southern states. Early Jersey, Large Charleston, Wakefield, Succession (\$1.00 per 100; \$2.00 to \$2.50, 5c per 100 F. O. B. High Point, N. C. 50c by parcel post, \$1.00). **MOFFITT FARM, HIGH POINT, N. C.**

STRAWBERRY PLANTS

Best Johnson's Planting and grow large, fancy strawberries. We guarantee our plants true to name, and to please you, or your money refunded. Write today for our 1916 catalog. It's free. Worth dollars to you. **E. W. Johnson & Bro., Salisbury, Md.**

POTATOES WANTED

In car loads or small lots. Active demand at good prices for market prices and terms. **GREEN & HARRIS, 521-23 N. Front St., Philadelphia, Pa. Etc. 1914.**



Let the Mulford Experts "Fatten" Your Crops

FEED your crops nitrogen, according to the method recommended by Federal and State authorities. The least expensive way is to plant clovers, alfalfa, cow peas or other legumes, inoculated with a pure, active culture.

Not only will these legume crops be "fatter" but your land will be greatly enriched by nitrates and humus for the other crops to follow.

Mulford Cultures

FOR LEGUMES

A legume, inoculated with **Mulford Cultures**, draws valuable nitrogen from the air and enriches the soil with it. **Mulford Cultures** contain fully twice the usual number of nitrogen-collecting bacteria. They are as carefully prepared and tested as Mulford Antitoxins, Serums, etc., for medical and veterinary use. You can prove to yourself the value of **Mulford Cultures** at a cost of

"A Dollar per Acre" (Five-Acre Bottle, \$5.00)
(One-Acre Bottle, 1.50)

How does that compare with the price of a nitrate fertilizer? No skill or special implements required.

Your Seed Dealer sells **MULFORD CULTURES**. If not, order direct. Send for fully descriptive booklet E.

H. K. MULFORD CO. Manufacturing and Biological Chemists Philadelphia, U.S.A.

Save 20% Buy the Famous Riverside Tires

Guaranteed 5000 MILES
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GET our 1916 prices before you buy tires. We save you one dollar out of every five, of others prices. And we unconditionally guarantee the mileage. Famous racers have broken all records on Riverside Tires. SEND FOR AUTO BOOK. Showing Riverside construction—wrapped tread—one care—toughest fabric, with pure Upper River Para Rubber, extra thick tread. Book shows similar savings on all automobile accessories. Sent free on request. Write today.

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New York Chicago Kansas City St. Paul Portland
Write to the house most convenient to you

PRICES SLASHED

My new 1916 low prices and selling plans, cash or time, are fully described in my new 250-page book. Do not buy a spreader of any make or kind until you get this book. Ask for my special proposition on spreaders from now until seeding time. My new model spreader with all most features, all steel frame, low down, light draft, double chain drive, cut under front wheels, channel steel frame, channel steel tongue, endless apron and force feed makes a finer and wider spreading machine than ever. Shipped from Waterloo, Kansas City, St. Paul, Council Bluffs and Chicago. All styles and sizes of spreaders and sprayers or boxes fully described in this big, new book. W. H. SALLON, Pres. Wm. Sallony Co., Box 100, Waterloo, Iowa. Mowers, Sprayers, Manufacturing Specialists.

CLOVER SEED Party and germination absolutely guaranteed. Buy direct. Freight prepaid. Samples free. Click Seed Farms, Box 31, Muskegon, Pa.

WHITE MARSH PULVERIZED LIMESTONE

HIGHEST QUALITY
Is Not Caustic—Cannot Burn
IMMEDIATELY AVAILABLE
The best and most economical form of Lime to use.
Full information as to the most economical way to purchase.
E. J. LAVINO & CO.
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"LIMOID"

USE WARNER'S
(Hydrated Lime)
IT IS
ALL PURE
ALL SOLUBLE
ALL AVAILABLE
ALL VALUABLE
ON ACID SOILS
Manufactured with "up-to-the-minute" equipment and under highest chemical supervision.
CHARLES WARNER COMPANY
Wilmington, Del. Philadelphia, Pa.

Soils & Field Crops

Conducted By A. E. GRANTHAM

The Final Steps in Seeding Alfalfa

After the alfalfa ground has been limed and provision made for inoculation either through the seed or the soil it is nearly ready for receiving the seed. The question now arises concerning the application of fertilizers. In the eastern states it will be necessary to apply a fair amount of plant food in order to get the best results. Manure is of great benefit in promoting the growth of alfalfa, but it is open to objection on account of the danger from weed seeds which it may carry. Consequently it is best to apply the manure to the crop which precedes the alfalfa, preferably the year before. In this way the manure becomes well decomposed and the weed seeds germinated and destroyed. It is never a good plan to apply manure directly to the soil before seeding alfalfa, for this reason. However, manure should be used when available, as it will be of much service in getting a vigorous growth of alfalfa if precautions are taken to apply it some months before the alfalfa is seeded.

Where the alfalfa follows a crop of potatoes that have been well fertilized very little fertilizer need be added. In either case it is well to use 500 to 600 pounds per acre of a mixture carrying 2 to 3 per cent. of nitrogen, 10 per cent. of phosphoric acid and 6 per cent. of potash. After potatoes, or where the land has been summer fallowed for several weeks, an application of 400 to 600 pounds per acre of a mixture containing 12 per cent. phosphoric acid and 6 per cent. potash, the quantity depending on the fertility of the soil, will be found satisfactory. Alfalfa responds generously to applications of phosphoric acid, hence the reason for a large percentage of this element of plant food.

The fertilizers, if applied with a distributor, should be put on a few days before seeding, in order that there may be no harmful effect from the seed getting into direct contact with the chemical salts. However, if drilled in there is no risk in sowing the same day. A disk wheat drill with a fertilizer compartment is an excellent machine for applying the fertilizers.

TIME OF SEEDING.

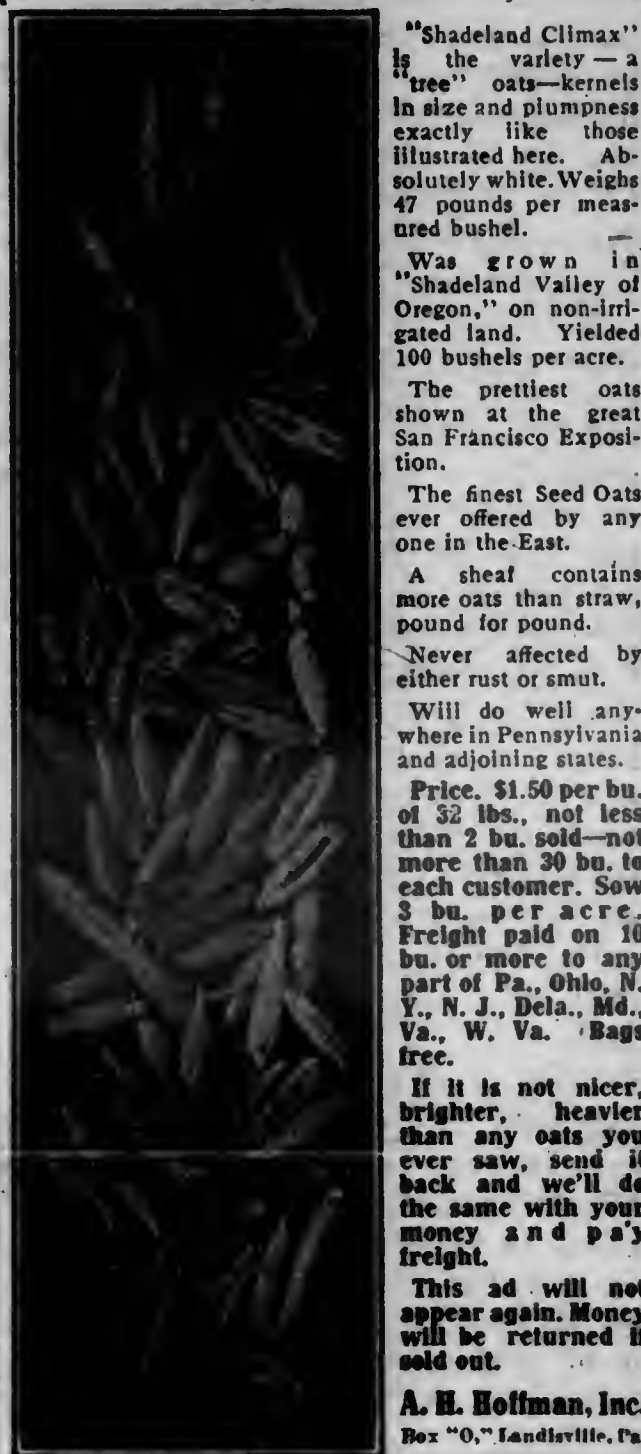
In the latitude of Philadelphia alfalfa should be seeded about the middle of August. For regions farther north the seedings should take place somewhat earlier. It is very necessary to see that the soil has sufficient moisture at the time of seeding to germinate the seed promptly. If the ground has been carefully prepared by fallowing, there should be little difficulty in securing enough moisture in the surface soil, even in a dry season, to germinate the seed. The danger in sowing on dry soil is that there may be enough moisture to germinate some of the seed which will perish if the drought continues. Just after a good soaking rain, as soon as the ground is dry enough to work, is the best time for seeding. The seeding in general should take place early enough to get the plants well established before winter. A growth of 6 to 8 inches at the time of the first frost is sufficient for the plants to winter well.

METHODS OF SEEDING.

Alfalfa may be sown by several methods, any of which may serve the purpose of distributing and covering the seed. A hand seeder, a wheelbarrow or the grass seeding compartment of a grain drill may be used satisfactorily. If broadcasted the seed must be harrow-

GROW OATS

that will be a pleasure to you and a surprise to your friends.



"Shadland Climax" is the variety—a "true" oat—kernel in size and plumpness exactly like those illustrated here. Absolutely white. Weighs 47 pounds per measured bushel.

Was grown in "Shadland Valley of Oregon," on non-irrigated land. Yielded 100 bushels per acre.

The prettiest oat shown at the great San Francisco Exposition.

The finest Seed Oats ever offered by any one in the East.

A bushel contains more oats than straw, pound for pound.

Never affected by either rust or smut.

Will do well anywhere in Pennsylvania and adjoining states.

Price, \$1.50 per bu. of 32 lbs., not less than 2 bu. sold—more than 20 bu. to each customer. Sow 3 bu. per acre.

Freight paid on 10 bu. or more to any part of Pa., Ohio, N. Y., N. J., Del., Md., Va., W. Va. "Bugs free."

If it is not nicer, brighter, heavier than any oats you ever saw, send it back and we'll do the same with your money and pay freight.

This ad will not appear again. Money will be returned if sold out.

A. H. Hoffman, Inc.
Box "O," Landville, Pa.

Quality Lime-Products



Knickerbocker Lime Company
1306-7 Finance Bldg., Philadelphia

SEED CORN FOR THE CRIB AND SILO

Two choice varieties. Unsurpassed for large yield and good quality. Also wins in the leading shows. One variety especially suited for the silo. Grows a large stalk and ear. Never fails to make a big bulk of rich ensilage.

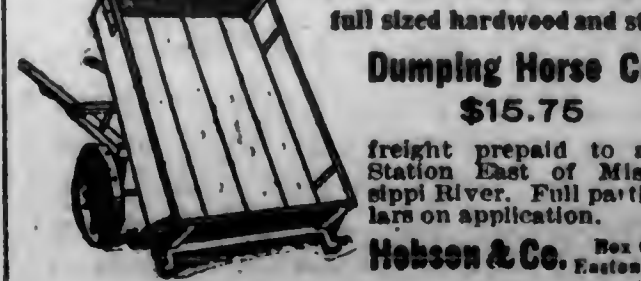
GROWN AND SOLD ACCORDING TO THE RULES OF THE VIRGINIA CORN GROWERS ASSOCIATION.

Guaranteed to germinate from 95% to 100%.

Every lot tested and the percentage of growth marked on shipping tag. Shipped on approval. Price—shelled, graded and put in good bags, \$3.00 per bushel.

Don't plant inferior varieties and untreated seed when you can get the best for less than 50 cents per acre. Send for bulletins No. 5. Write today, this ad will not appear again.

CHAS. WAMPLER
HARRISONBURG, VIRGINIA.



This Warranted

full sized hardwood and steel

Dumping Horse Cart

\$15.75

Freight prepaid to any station east of Mississippi River. Full particulars on application.
Hobson & Co. Boston, Pa.

ed in. The grain drill will cover the seed sufficiently if the land is well prepared. The objection to a grain drill is that some of the seed may be covered a little too deeply. On sandy soils the seed should be covered somewhat deeper than on a clay soil. A depth of one to two inches is not too deep on well fitted sandy loam soils. Special alfalfa drills are now on the market which put the seed in drills or rows 4 inches apart. In this way it is possible to place seed at the proper depth, so that germination is perfect, thus requiring the minimum quantity per acre.

THE RATE OF SEEDING.

About 20 pounds of prime alfalfa seed is sufficient to sow an acre. A less quantity would generally suffice if the seed could be evenly distributed and there were no danger from weeds. The alfalfa plants spread very little before the first winter and for that reason a thick, even distribution of plants is desirable in order to assist in holding the weeds in check. A more uniform seeding may be secured by sowing half the seed one way across the field and the other half at right angles to the line of the first sowing.

Only the best grade of alfalfa seed should be sown. The buyer should be fully assured that the seed is free from noxious weed seeds and dodger. Seed that is rusty looking or dull brown in color should be avoided, as the color indicates age. A bright lemon color with an occasional greenish tint is generally associated with alfalfa seed that is fresh and of high germinating quality. In any case, before buying, a sample of the seed should be examined for impurities and subjected to a germinating test in order to fully determine the quality of the seed. The state agricultural experiment stations will generally examine, free of charge, samples of seed for those who desire such tests made.

The eastern states are now dependent upon outside sources for alfalfa seed, as it cannot be produced in a humid climate. According to the U. S. Department of Agriculture about four-fifths of the alfalfa seed used in this country is home grown, being produced in the West and Northwest. The remaining one-fifth is imported and of late comes chiefly from Russian Turkestan. The latter is an inferior grade of seed and is not well adapted to our conditions in the East. It is now generally conceded that the western grown alfalfa produced without irrigation is best suited for the eastern states.

The Growing of Spring Oats

(Concluded from page 143)

so that the grain may develop before the hot weather sets in. Rust is less prevalent among early sown oats. Early seeding is even more important in the latitude of Philadelphia than farther north. The latter part of March or the first week in April would be fairly early in this latitude.

METHODS AND RATE OF SEEDING.

In sowing oats, as with other seed, it is necessary not only to distribute the seed but also to cover it at a uniform depth. With oats this can be done best with a grain drill. In this way a more uniform stand is secured than by broadcasting, and requires from one to two pecks less seed per acre. Under eastern conditions there is no doubt that drilling is the most practical method of securing a stand. In numerous tests at the experiment stations drilled oats have out yielded broadcasted oats by several bushels per acre. Better stands of grass and clover can also be obtained in drilled than in broadcasted oats, for the

reason that light and air are better admitted.

The best depth for sowing oats varies somewhat with the soil and season. There is always danger that oats will rot, if planted more than an inch deep very early in the spring when the soil is moist and cold. They may be safely sown deeper than one inch in a sandy loam soil and also where the soil is rather dry. Oats should not be sown so early as to prevent good preparation of the soil, as uniform depth of seeding and conditions for prompt germination are essential in securing an even stand.

With a good seedbed and a productive soil 2½ to 3 bushels of oats are sufficient to seed an acre, if drilled. One to two pecks additional will be required where sown broadcast. On thinner land as much as 4 bushels of seed are sometimes used. A lower rate of seeding is required where small-kernelled varieties are sown.

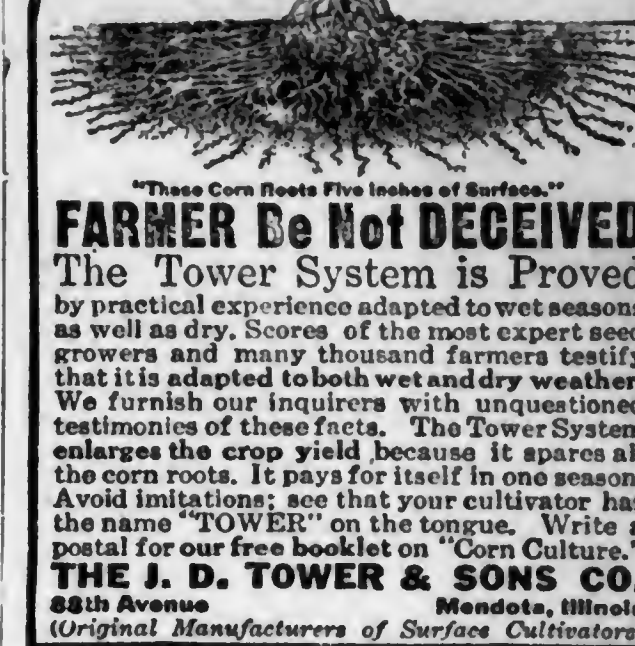
If it is necessary to buy new seed, it is better to get oats that have been grown under conditions that are similar to yours. Of course, good quality must be secured, whatever the source. The state experiment stations can generally advise what varieties of oats will do best in your locality. As the southern limit

of oats production is reached the more important becomes early maturity, and those varieties that will mature before the hot weather are to be preferred. Some sections are now attempting spring oats when better results would be secured from winter oats. Some of the well-known spring varieties which yield well are the Silverman, Swedish Select, Therson and Red Rust Proof. The latter two varieties are desirable where the rainfall is somewhat deficient.

The convertibility of the oats crop is a very desirable feature. If the crop does not promise to make a good yield of grain it may be cut while the grain is in the milk or dough stage and cured for hay. A very desirable hay is made in this manner. Often Canada peas are sown with the oats and the two harvested for hay, which makes an excellent hay for dairy cattle.

During the past two years 2,400 barn yard pollutions have been abated by Pennsylvania farmers by embankments of earth or concrete diverting the surface drainage, and saving both solid and liquid manure for fertilizing purposes. It is estimated that this manure saved, is worth \$120,000 a year to the farmers of the state.

Spare All Corn Roots



These Corn Roots Five Inches of Surface.

FARMER DO NOT DECEIVED

The Tower System is Proved by practical experience adapted to wet seasons as well as dry. Scores of the most expert seed growers and many thousand farmers testify that it is adapted to both wet and dry weather.

We furnish our inquirers with unquestioned testimonials of these facts. The Tower System enlarges the crop yield because it spares all the corn roots. It pays for itself in one season.

Avoid imitations: see that your cultivator has the name "TOWER" on the tongue. Write a postal for our free booklet on "Corn Culture."

THE J. D. TOWER & SONS CO.
8315 Avenue Mendota, Illinois
(Original Manufacturers of Surface Cultivators)

Established 1868 PHILADELPHIA

Agents wanted in unoccupied territory.

HIGH GRADE FERTILIZERS FOR ALL CROPS

Special Formulas for Each Crop

48 years of practical experience devoted to the development of the best formulas for different crops. Write today.

L. P. THOMAS & SON CO.
Established 1868 PHILADELPHIA

Agents wanted in unoccupied territory.

Potatoes all over the ground



Bradley's Fertilizers

(THE WORLD'S BEST BY EVERY TEST)

This crop was grown on old pasture land by Edward H. Williams, Jr., on Bradley's Fertilizer alone, and yielded about 300 bushels per acre. Send for 1916 prices and terms.

THE AMERICAN AGRICULTURAL CHEMICAL COMPANY

92 STATE STREET, BOSTON. 2 RECTOR STREET, N. Y.
BUFFALO, BALTIMORE AND PHILADELPHIA

The Practical Farmer

Live Stock and Dairy Section

Team Work in Breeding

By EARLE W. GAGE

The record of accomplishment made by the Southwestern New York Holstein Breeders' Association vouches for the desirability of farmers working in unison to achieve a higher level as regards co-operative effort in breeding. The members include the leading owners and breeders of registered Holstein cattle in the counties of Chautauque, Cattaraugus, Erie and Allegany, with a few members over the state line in Pennsylvania. This organization being two years old, is past the experimental stage, therefore allowing statements to be made, based upon conservative facts.

Any organization with a definite object in view, managed by the thoughtful

and pocketbooks opened, and enter the registered stock business. On some farms this introduction has been brought about in a small way. The best has been found in the introduction of pure-bred males and then pure-bred females one or two at a time, as finances would allow. This is accomplished with a minimum outlay. It is the active aim of the Southwestern New York Holstein Breeders' Association, and of every member, that no member keep grade or scrub breeding male or females, and that these be replaced as soon as possible by pure-breds. Cost accountings already tabulated by the Chautauque County Farm Bureau, show farmers



Netherland Harriet Ann 110218

This Holstein Cow Broke World's Record, Producing 188 Pounds of Milk in 31 Days. Her 7-day Record is 813 Pounds. Owned by Dow Farms, Randolph, New York.

farmer, is certain to be long-lived as well as useful. Better breeding of farm stock is definite and worthy. With this accomplishment in view, direct money returns are certain to result to the farmer. The increased demand for milk for the condensing plants, the Buffalo city market, and other nearby consuming centers, has supplied the enthusiasm needed for the success of the Southwestern New York Association.

For the past ten years the interest and progress have been manifest in this part of New York by the continual introduction of the finest members of this milk-producing breed. The object of the organization has been aiding those already keeping high grade stock, as well as increasing interest among farmers to breed only registered stock. In a section where marketing conditions are exceptionally well developed, no farmer can afford to keep common grade stock. The advertising and co-operation which this live wire organization of farmers have been leaders in, have caused tens upon tens of farmers to no longer rest content with the old "brindle cow," but to take to the trail of a sure enough profitable Holstein. Farmers can not rest content with a meager milk production when living in a neighborhood with a record breaking butter fat producer, and so they gradually have their eyes

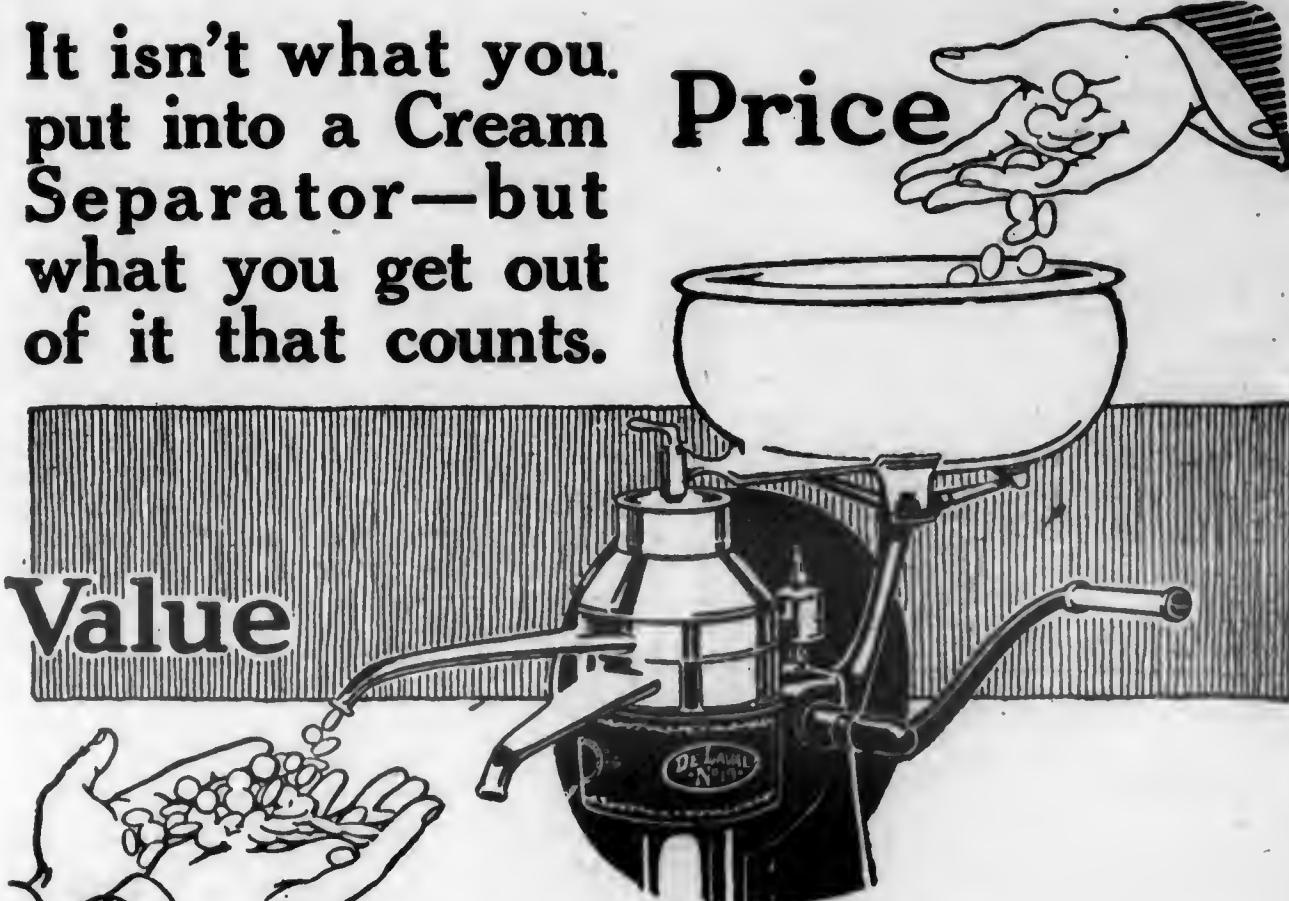
clearly that the only open way for farmers of New York, in fact anywhere, to make dairying profitable is through keeping live stock of a better class. The Association's aim is given in one clause of the constitution, which reads: "Its aim shall be to promote the breeding and improvement of high-grade and pure-bred live stock in southwestern New York, and to aid its members in buying, breeding and selling first-class animals." The association has been productive of good in the community, and its ideal is surely becoming recognized in this, even in so short a time, the interest in better live stock being greatly stimulated. The first annual sale of the association proved a great object lesson to the farmers and dairymen as to the value of pure blooded Holsteins, for while good grades may earn money for the farmer as milk producers, when the sale of cattle is considered, pure blooded stock sells for so much more than the dairyman soon has his investment returned, with a goodly sum for interest, as well as a barnful of producers.

The Association publishes and distributes a monthly, in which the members are allowed a 20-word adv. free. This allows the members to reach those within their field who are interested in pure-blooded stock, and gives a profit-

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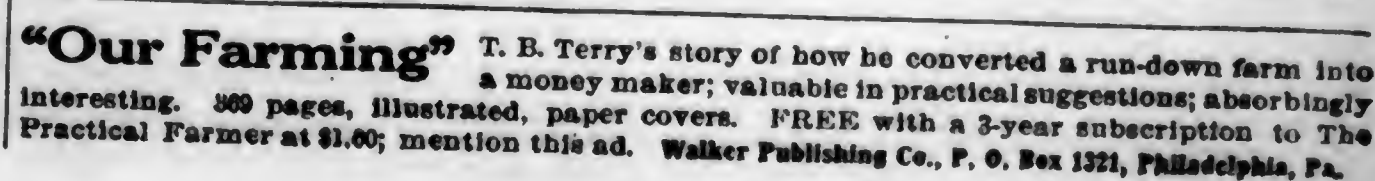
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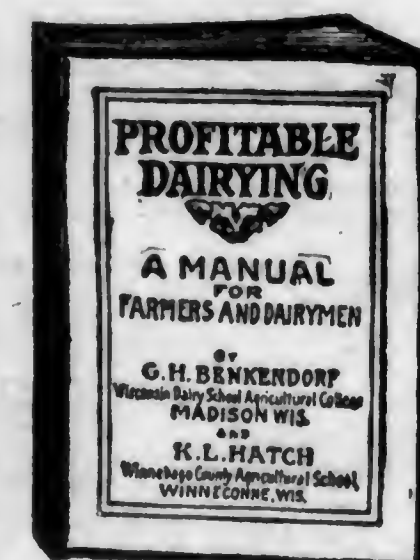
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1910—London—First Prize
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1913—London—First Prize
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In This Issue: Tomatoes a Good Main Crop

The Practical Farmer

PUBLISHED
CONTINUOUSLY
SINCE 1855

Volume 112
Number 8

PHILADELPHIA, APRIL 15, 1916

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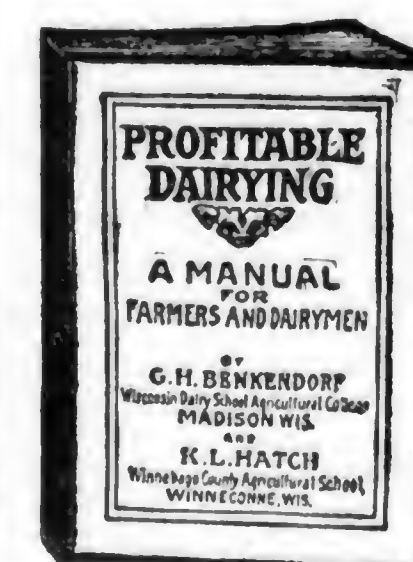
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The Practical Farmer

PUBLISHED CONTINUOUSLY SINCE 1855

Volume 112 Number 8

PHILADELPHIA, APRIL 15, 1916

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A Spray Program for Fruit

By C. A. McCUE

Good, thorough spraying has become essential for the production of first-class fruit. All up-to-date fruit growers realize the importance of having a regular spray program for the season.

Spraying is as necessary in fruit production as fertilizing, pruning or cultivating. The grower who has grown and sprayed his fruit for years has become a keen observer of insects and diseases and will vary his spraying and his spray material to best meet his needs. The beginner is, however, to a large measure dependent upon a regular program for spraying his fruit crop. He needs to know what combinations of sprays to use and when to apply them, in order that he may reap a maximum of benefit at a minimum outlay of time, money and material. This article has been prepared with that end in view.

No spraying can be efficient unless the spray is put on with thoroughness and at the right time. Pump, engine and nozzles must be in good working order and the right strength of spray used if efficient work is to be accomplished. Many of our spray materials may be combined without harm to the tree or without any lessening of the efficiency of the different ingredients.

Too much emphasis cannot be laid upon thoroughness in spraying. Many a crop of fruit has been reduced in market grade simply because spraying was rushed too rapidly. Scale and other sucking insects cannot be controlled unless they are hit by the spray. Fungous diseases cannot be prevented unless both fruit and foliage are thoroughly covered with a film of the proper spray material.

THE SPRAY PROGRAM.

1. Apples, pears, peaches, sweet cherries and plums are susceptible to attacks from San Jose scale and the spray treatment for this insect is the same for all these trees. Spray with lime-sulphur, using one gallon of commercial lime-sulphur (32 degrees) to 9 gallons of water. Make the application just as the buds begin to swell in the spring. Good results, as far as the scale is concerned, may be obtained by spraying either in fall or spring while the trees are dormant, but with the peach it is better to delay spraying until the buds are well swollen. Lime-sulphur applied at this time will control the leaf curl of the peach. If the dormant spray of the apple is put off as late as possible it will be of great assistance in controlling the apple aphid. Sour cherries are rarely attacked by scale and the grape seldom needs a dormant spray.

2. The various fruits demand different treatments after the dormant season is over and we will take them up one by one.

THE APPLE—SPRING SPRAYS.

No. 1. Dormant spray. Lime-sulphur. No. 2. Cluster bud spray. Use Bordeaux mixture 4-4-50, or lime-sulphur 5 quarts to 50 gallons of water. Add 1 gallon of 40 per cent. sulphate of nicotine to every 800 gallons of spray. If any chewing insects are at work, add 3 pounds of arsenate of lead paste or 1½ pounds of arsenate of lead powder to every 50 gallons of the spray. This poison will also help control the curculio. Apply just as the blossoms are beginning to show pink. (While good results can be gotten with lime-sulphur and with certain proprietary mixtures, the writer would prefer to use Bordeaux mixture for this spray. It is more certain to control apple scab and if put on early enough it will not russet the fruit.)

No. 3. the calyx cup spray. Use 5

quarts of lime-sulphur and 3 pounds of arsenate of lead paste or 1½ pounds of arsenate of lead powder to every 50 gallons of spray. If aphids are still present add 1 gallon of 40 per cent. nicotine sulphate to every 800 gallons of spray. Apply just after the blossoms fall. This spray must be put on before the calyx cup at the eye of the apple is closed. If a large acreage has to be sprayed one should start to work as soon as the blossoms begin to fall. This spray is primarily for apple scab, codling moth, curculio and aphid, but will also take care of a host of minor diseases of the apple. If one has a variety that scabs or blotches badly it would be well to use Bordeaux mixture in place of lime-sulphur. The great objection to Bordeaux at this time is the danger of permanently russetting the fruit.

No. 4. the follow-up spray. Repeat spray No. 3, using the same materials. If aphids are not troubling, leave out the nicotine sulphate. Apply about ten days after the calyx cup spray.

THE APPLE—SUMMER SPRAYS.

Early apples need no summer sprays. Late fall and winter varieties do.

No. 5. early summer spray. Use Bordeaux mixture 2-2-50 and apply about July 1st. If leaf-chewing insects are present add arsenate of lead as before. This spray is seldom needed unless one has a variety that is very susceptible to apple blotch.

No. 6. late summer spray. Use Bordeaux mixture, 2-2-50 formula, adding 2½ pounds of arsenate of lead paste, or 1½ pounds of arsenate of lead powder. Apply from July 25th to August 1st. This spray is for the second brood of apple worm, apple blotch, fly speck, lesser apple worm and a host of minor troubles. Many growers of winter apples have been neglecting this spray. It should never be omitted.

THE PEAR.

No. 1. dormant spray. Lime-sulphur as for apples.

No. 2. calyx cup spray. Same as calyx cup spray for apples.

No. 3. the follow-up spray. Bordeaux 2-3-50 and 2 pounds of arsenate of lead paste or 1 pound of powdered arsenate of lead. This spray is often omitted.

No. 4. the summer spray. If leaf spot, or cloudiness of the fruit threaten, spray with a 2-3-50 Bordeaux about June 20th. If you are growing varieties, like Flemish Beauty, that are susceptible to pear scab, apply a second summer spray of Bordeaux about July 25th. In case of attacks of pear psylla a "pre-blossom" spray should be given just as the leaves are unfolding. Use 1 gallon of 40 per cent. sulphate of nicotine to 800 gallons of water. Some authorities contend that Bordeaux should also be used at this time, as there is some evidence to show that it will help control the spread of pear blight.

THE PEACH.

No. 1. dormant spray. Use lime-sulphur as for the apple; but to perfectly control the leaf curl, delay the application until the buds are swollen.

No. 2. the curculio spray. Use 2 pounds of arsenate of lead paste or 1 pound of powdered arsenate of lead to every 50 gallons of spray. As an insurance against burning the foliage it is a good plan to add a pound of freshly slaked lime for every pound of arsenate of lead used.

If the peach orchard has been seriously troubled with scab it is best to use self-boiled lime-sulphur also at this time.

Formula, 8-8-50. Apply just as the "shucks" are splitting and beginning to slip off the young peach.

No. 3. first rot spray. Use self-boiled lime-sulphur, 8-8-50. Apply about May 25th to May 30th. Care must be used to hit the fruit and cover it with spray. This spray is for scab and brown rot. It was formerly customary to add arsenate of lead to this spray, but the writer believes it to be unnecessary.

No. 4. second rot spray. About one month before the fruit will be ripe spray with 8-8-50 self-boiled lime-sulphur. Some advocate the use of 1 gallon of commercial lime-sulphur to 150 gallons of water for this spray, but the writer believes this spray to be dangerous to peach foliage, especially in humid climates near the coast. This spray is for brown rot and scab.

CHERRIES.

No. 1. dormant spray. Lime-sulphur. This is for sweet cherries; sour cherries do not need it.

No. 2. curculio and rot spray. Spray with Bordeaux 2-3-50, adding 2 pounds of arsenate of lead paste or 1 pound of arsenate of lead powder. Apply just as soon as the blossoms fall.

No. 3. foliage spray. If the cherries are troubled with leaf diseases, spray with a 2-3-50 Bordeaux as soon as the fruit is harvested.

No. 4. late summer spray. If shot-hole fungus persists, spray with a 2-3-50 Bordeaux about July 25th to August 1st.

PLUMS.

Treat Japanese plums the same as peaches. The curculio spray will have to be made very soon after the blossoms fall, as the "shucks" slip off the plums very quickly after the blossoms fall.

THE EUROPEAN PLUMS.

The European and native plums will stand spraying with Bordeaux.

No. 1. dormant spray, same as for apples.

(Concluded on page 171)

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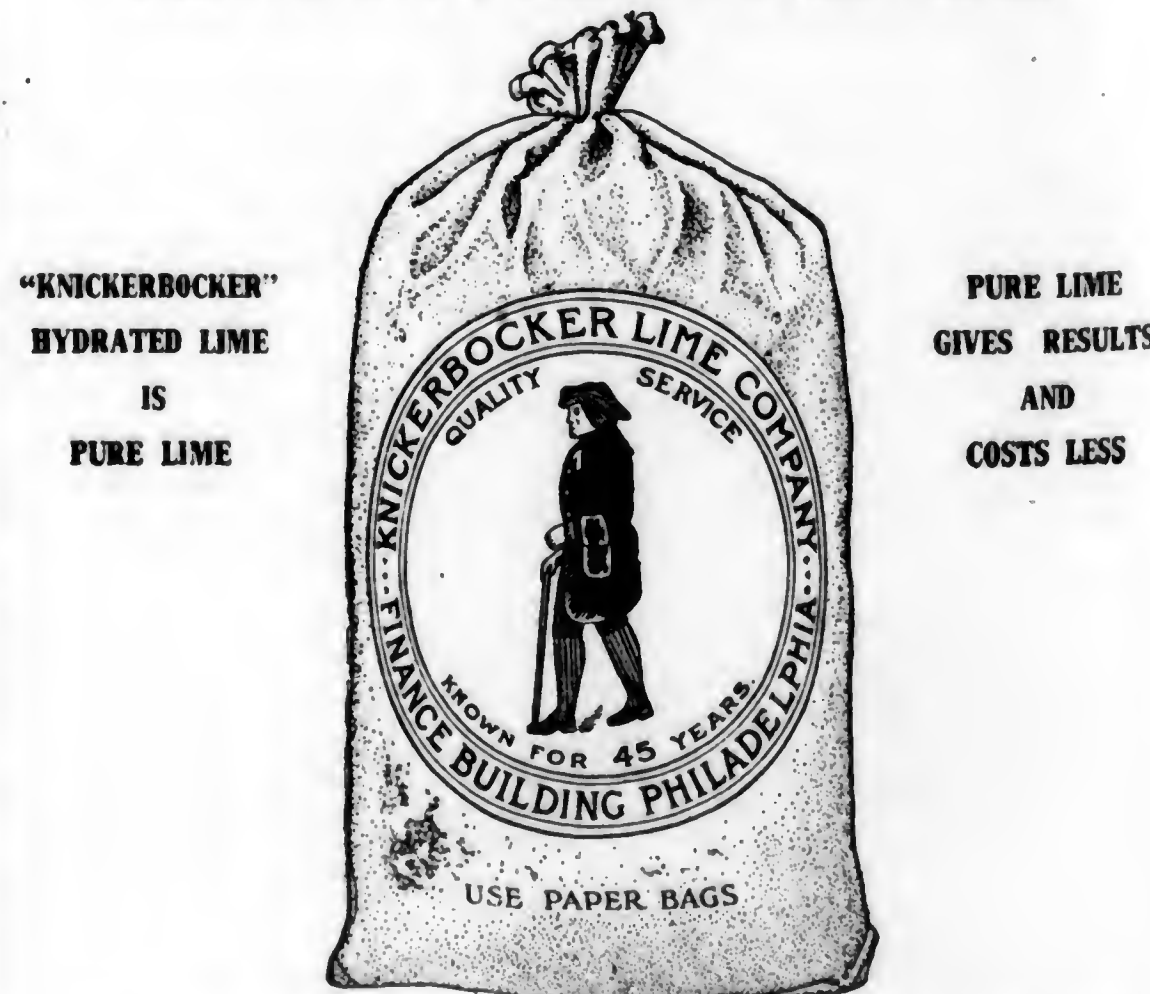
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Tomatoes a Good Main Crop

By THEO. F. JAGER

OF all the vegetables that I have ever raised and sold, I prefer tomatoes. Tomatoes are dear to the American heart. Folks love them ripe to eat out of hand, sliced and spiced, and then again in soups and sauces, and after all is said, a large surplus is put up to sustain the table during the off season. Tomatoes can be sold anywhere. Everybody wants them, and they stand shipment well. One can grow them in the back lot for home consumption, or in acre plats on the farm, and take them to the market or stores in town lots, and if the early frost threatens the destruction of all else, the green tomatoes on the vines prove saleable either to canneries or for private use. And to top it all off, tomato plants are practically disease-proof, easily grown and hardy. They produce liberally, with fair care and without fussy hand weeding; their cultivation is as easy as that of corn. I fully believe that we are just in the beginning of our tomato culture. Its possibilities are, to a large extent, still unknown. When we have studied deeper into the advantages of home canning and when the time arrives that every trucker or trucking community puts up their surplus for later offering under their own guaranteed brands, we may begin to realize what relation tomatoes will have to the future feeding of this country.

The essentials to success in tomato culture can be grouped as follows:

1. Study the soil and give it what it needs in fertilizer or humus. Keep the cultivator going to preserve the dust mulch on top, so that the fruits may draw the tons after tons of water needed to reach size and perfection.
2. Earliness of at least a part of the crop is essential to realize the high prices of the early market. To supply it, hotbeds or a hothouse must be used, with cold frames and open land plant protectors to follow.
3. Produce the best only. There is a variety for every soil and climate, a color and size for every demand. If the very best possible has been attained, do not rest satisfied, but select the best fruits from the best bearing vines again for your future seed supply.
4. Sell as near home as possible, prices being equal, or at least nearly equal, crates and shipping considered; remember, from the field to the store or kitchen is always the best selling plan, if it can be worked.
5. If tomatoes fall in price at any time during the season, start your canner going and put up for winter selling what would otherwise be disposed of at an insufficient profit, or at a loss.

As to No. 1, the soil requirements of the tomato varieties differ but slightly. I have found Chalk's Early Jewel and John Baer doing best on a rich, deep, cool soil, closely followed by Bonny Best, while all the real early tomatoes, such as Earlianas and Early June, prefer a light, sandy, warm soil. The main crop tomatoes, the best of which I found to be the Stone, Isbell's Colossal, Trucker's Favorite and Ponderosa, can be successfully grown on any good soil that is workable. The field intended for my tomato crop is first covered with eight or ten tons of barn manure which is plowed under the fall previous. The rate of \$2 a load, all a team can pull. It is pure horse manure, straw having been used as bedding. According to Van Slyke, this gives me, expressed in percentage, .55 nitrogen, .10 phosphorus, and .51 potassium values in the solids. If I could get the liquid values to it I would add .45 to nitrogen and .49 to potassium values, but most of this is lost in the city stables. I have a sandy, gravelly soil without a bottom, hence must feed every year, and do this liberally, but as the deep-going roots of the fruit trees that



Type of "John Baer" and "Bonnie Best" Tomatoes

even balance fairly well that way. If I apply (if I have nothing else to substitute) 400 pounds of bone meal or 300 pounds of acid phosphate, this to give me the phosphoric acid, and 100 to 125 pounds of sulphate of potash, I think of having done well by my tomatoes, and that I can look forward to the harvest with equanimity. The horse manure and poultry droppings, with a little dressing of nitrate of soda while the plants need a little pushing after being set out, will produce a strong growth of stems and leaf. This will be the future framework for the fruit. In former years, when it was not applied, blighting of blossoms often resulted, because the foliage was not dense enough to protect the delicate blossoms against the hot rays of the July sun. Once a neighbor remarked to me, when he saw my two-acre patch of dark green, luxuriant vines late in June: "Too much manure; you won't get any fruit to pay for the hauling of it." But when he came again later that year and saw the fruit hidden on strong laterals, counting as many as nineteen green tomatoes on one, he was somewhat surprised, and guessed right when he said: "I guess you must have done some trick with this here land to make the vines bear like that." It was nothing but the judicious feeding of the vines for

frame and frame cover, this first and then fruit.

A few days before the plants are going to be set I again harrow the land, and finally roll it, when the field is ready. It is then a loose, well mixed soil well stored with fertilizers for the crop. I keep the cultivator going between the rows until the vines cover the ground. One cannot cultivate too often. As I set my plants three feet apart in the rows, and rows three feet apart, I can cultivate both ways, and do this alternately, while always aiming to throw enough dirt around the plant to smother the close-in weeds. If this is done carefully no hand hoeing is necessary.

Where I can pick the location of the tomato patch, I prefer a slope to the south, and one protected against the prevailing winds by a wood lot or older orchard, especially for the earliest bearing tomatoes, because every day I gain in the growth of the vines means a future early dollar in profits.

As to No. 2. Everybody aims to supply the early market. There is big money in it; and we are only hampered by our limitations in hothouses or hotbeds. Every trucker owes it to himself to satisfy the demand for early tomatoes to the limit, as the early and mid-season demand is one largely for immediate use, while the main or winter crop goes to fill the preserving jars and "ketchup" bottles.

Seed for the early tomatoes should be sown in the greenhouse or hotbed about February 10th for this latitude, northern New York. These, of course, have to be nursed along in hothouses or beds, as the weather for open field tomatoes is not fit until about the middle of May. For the later field planting the seed is sown early in March, or even late in March, as one can get them out and growing just as fast as if they were sown ten or more days earlier, and in plenty of time for the earliest open land planting, if the protections used and the land are right. I have started the sales of the first tomatoes at 13 cents per pound, or two pounds for a quarter, and come down to 10 cents a pound within ten or twelve days, to meet the competition. From then on the price dropped rather rapidly until it was two cents a pound, when I begin to sell by the basket, pecks at first and later on in 14-quart market baskets. I have never sold, and never shall sell, tomatoes if they drop below 80 cents per bushel for the ripe, or 40 cents for green fruit.

Last season we had an unexpected freeze during the middle of May when most tomato lands were planted, and the plants were killed. I saved mine by smudging the plants. It certainly paid me well to spend that night with the fires. The lowest price I realized last year in bushel lots was \$1.50. We had seven fires smoldering under piles of green and dried brush, rags and old fertilizer bags, and kept them going with a little coal oil, when they threatened to go out. The smudge was certainly penetrating, and laid a thick white vapor over the field. The plants were not the least bit affected by the frost. A few that were in another lot we saved next day by sprinkling liberally with cold water. I mention this simply to show that one has to keep his wits about him if the early tomatoes are going to prove sure crop producers. One frosty night late in the season may blight all hopes. A month after the seed has been sown, or when they have four to eight leaves, the seedlings are transplanted an inch apart in rows two inches apart, and two weeks later, when they crowd, they are again transplanted into paper bands. I use the heavy tag manila paper bands, because the cheaper grade of red paper bands rot too quickly. They can be had round or square. I prefer the latter, as they

(Concluded on page 172)

Tomatoes a Good Main Crop

(Concluded from page 167)

hold more soil and present an even surface on the bench or in the cold frame. Every time plants are transplanted they get a little nitrate of soda—about a teaspoonful to a gallon of water—to push them along. I prefer the bands because they are cheaper and better than pots; neither does one need to pull the bottoms off when they are set out in the open. I use several thicknesses of newspapers to lay on the bench or in the hotbed that has practically spent itself, to form the bottoms for all the paper bands planted. The main thing is to keep the plants growing, not spindly, but stocky, and the repeated transplantings (three or more) add to this. Whenever we have a pleasant day the bed is aired, and if the weather permits a cheesecloth cover instead of the glass, is put on, so as to harden the plants off. Later lots, instead of being transferred into paper bands, go into hotbeds partially spent, and from there directly to the cold frame. As open land protectors there are several devices on the market. Diametrically opposed to real early tomatoes are late tomatoes. They also often bring exceptional profits. For them plants are set out here, northern New York, early in July. These plants give me the large, desirable fruits that bring the creamy prices, against the small stuff grown late by earlier-set plants.

As to No. 3. To produce the best we must use the best seed, and employ the very best methods. That is clear. The best means not only large, smoothest, most solid fruit, but the most profitable vines in general, plants that are blight-proof and able to stick it out all summer to bear and ripen their fruit. The best seed that we can buy from reliable houses is just good enough. We cannot afford to be satisfied with anything but the best seed. If we, after that, wish to improve on it, we should go through our field and keep the best fruit from the strongest bearing laterals of the best plants, if such fruit is solid, smooth and large, and use that for the future seed selection. If this is done year after year we shall soon have a strain of our own that will be superior for our particular soil and location.

Another step to advance is hybridizing. I had a few plants once that were first generation hybrids and which had been crossed for large, smooth fruit, small seed cavities, solidity and abundance from Ponderosa, Truckers' Favorite and Bonny Best. They made a good yield and splendid fruit. I am sure our experiment stations could find this an exceptional chance to aid the gardeners and farmers. The individual is, as a rule, too busy to be able to devote much attention to it.

As to the best varieties to use, opinions differ somewhat. For early markets nothing excels Burpee's June Pink, an Earliana variety. Bonny Best is another good one, closely rivaling the Early June in earliness. Of course, there are also the Earlianas, our old standbys, and Chalk's Early Jewel. The trouble with Earliana and June Pink is the large percentage of imperfect fruit, and for this reason I do not use them, notwithstanding the fact that they are highly profitable varieties to have, and prolific bearers. I hate to cull after a basket is picked in the field. Earlier than the Earliana, and smoother, is Bonny Best. It is but rarely that I find cull fruit on them. Another new tomato that is making a name for itself is the John Baer. It produces solid shipping tomatoes within thirty days and one

plant has had as high as 83 fruits; they ripen evenly up to the stem and have a bright red glistening color. The flavor is mild, but compares well with later varieties. None of the real early tomatoes come up to the quality of the winter varieties, nor are they as solid. Bonny Best is, if anything, the best of all second early sorts; in fact, good enough to use through the entire season.

For the main crop, and especially for those who want a big, solid, smooth tomato, I use Truckers' Favorite. The drawback with me is blighting at times, and while this can be prevented or reduced through spraying, I have decided to use Isbell's Colossal hereafter, especially, also, as Truckers' Favorite is purple pink and my folks prefer the deep scarlet red. Educating the people is all right, but not if it has to be done at the expense of the market gardener's time and pocketbook. Pink tomatoes are as good, or better, than red or purple ones, but if the folks do not like the color it is foolish to grow them.

Generally speaking, all the Earlianas are early and late liberal producers, but they all lack that smoothness of the fruit so much desired. I aim to get smooth, even sized large fruit first, then red color, solidity, few seeds and taste. It would be the other way first, but people will buy for looks. Bonny Best, Chalk's Early Jewel and Stone are good enough for any market, and if one adds to such the Ponderosa, Paragon and Perfection, size, smoothness and quality are gained to satisfy any demand.

As to No. 4. I believe in getting all the profits, hence I am an enthusiastic retail seller. Direct from the garden to the kitchen, or, as I often say when I first introduce myself to new customers, I have "tomatoes with the night's dew still damp on them." The first tomatoes are, as stated before, sold by weight. I have a scale with me on the wagon, and weigh them in grape baskets, which allows a clean, neat delivery. As the season advances and prices drop, I pack them in peck and 14-quart baskets. I always first pack a layer of rather hard and a little unripe tomatoes, then ripen ones with more color, and finally top off with the dead ripe ones on top. In this way the consumer gets a basket that will prove good for days to come. As I always make it a point to explain why I have packed them thus, the buyers appreciate it. Should there be a customer who wants a basket of all dead ripe tomatoes it is quickly arranged. As I always unpack my basket, or take another basket for mine, I save considerable basket expense. Although I sell from 1800 to 2500 baskets every year, it is rarely that I need to buy more than ten dozen of them to give me a start.

In picking tomatoes I always pick the ones just showing nice color. To wait until they are dead ripe means a loss. They are apt to crack and thus prove unsaleable; and again, they may prove too soft for hauling. Another point is, every tomato that is about ripe, if removed, releases the plant to that extent, to exert its energy to the ripening and growing of the other fruits. If there is at any time indication of show-ers coming, I look ahead and pick them only half ripe and allow them to ripen in the barn. In that way I always have enough tomatoes on hand to supply my customers, even if rains keep us out of the lot. I pick only good, saleable tomatoes. All the seconds, all the cracks, misshaped and small ones are gathered separately and offered at about half regular prices, for making catsup. Thrifty housewives will gladly take them in bushel lots at 80 cents.

I am unable to say what profit a man

should realize from an acre of tomatoes properly taken care of. I know this, that I have sold, from one little patch just a trifle over one-twelfth of an acre, \$94.60 worth of tomatoes; that would mean about \$1100 per acre. Last summer I was rather busy and neglected my later accounts, but from the two and one-half acres set out to early, second early and late varieties I am sure I sold over \$1900 worth, and that did not include the many bushels that we used at home. I think it would be no trick for a trucker with a good private trade to make \$800 or better per acre, net, from his tomatoes. Ponderosa grown on two square rods of ground has given a return within a few cents of \$50. This means \$4000 per acre, and shows what may be made with tomatoes under expert care and scientific feeding. If one should use the best seed selected for a particular location and soil through a selection or hybridizing, I am sure this record can be excelled. Twelve to fourteen hundred bushels of saleable fruit have been taken from an acre of field grown tomatoes. What channels do such results open to one who cares to devote his all to still better crops?

Now to the last point under consideration, that of canning the surplus. The better a market is for tomatoes, the more it is apt to be glutted during the height of the season. When the early tomatoes are disposed of and the second early just past their prime picking, the general run of so-called first farm tomatoes come in and depress prices, because they are in excess of the demand. This is the time when the thrifty trucker gets his canner going. In so doing he not only supports the markets to rally for better prices, but he adds to his farm reserve store of products for winter selling. While it is true that the summer canning of tomatoes is only a fraction of what generally follows later in the year, it should by no means be neglected. I started with just a common wash boiler with a false bottom and used ordinary Mason jars, but found that a larger device would be more profitable. This I found in a home canner outfit, one of which should be on every farm, as the waste of fresh vegetables alone would make up its cost in one year. It is really surprising how many home-canned vegetables can be sold at prices no higher than for the same quantity and quality usually offered in the stores, and thus sold they give us three profits of middle man to that of the grower. Try it and see, is my earnest advice to all who cannot find a market for all they produce.

I prefer the jars, because they give the article that home-made look which store goods lack. I believe they sell so well on that account. The man with a home canning outfit is, to a large extent, independent of the fluctuation of the market. I am sure community canning and community selling of canned products will aid greatly to establish the equilibrium of the general market and assure a fair, steady income to all.

In closing, let me suggest that we all should more or less depend on one main crop, and study this main crop to bring it to perfection, to the betterment of our own lives. Mine is tomatoes? What is yours?

(EDITORIAL NOTE.—As to early varieties of tomatoes, I have found the Langdon strain of Earliana the earliest and smoothest. The advantage of the Earliana is that it throws its whole crop at once while the price is high. Bonny Best is close behind it and John Baer is two weeks later and is so identical with Chalk's Jewel that I can see no room for it.

I find the earthen flower pots better

and cheaper than the paper dirt bands. The bands take too much time and bother to handle. I can get four-inch pots for less than a cent each, and they last indefinitely, while the paper is thrown away after one season's use, and in the long run becomes more costly than pots.

Eight tons of hard-wood ashes per acre would mean 800 pounds or more of potash, 5600 pounds of lime and 320 pounds of phosphoric acid, a wholly needless amount, especially on sandy soil, as that much time might for a time do more harm than good.

I spread my manure in the fall and let it lie until spring and then use fine bone meal at the rate of 1000 pounds per acre after turning under the rotted manure. Down here we would consider 80 cents a bushel a very fine price for the main crop of tomatoes. Last year our growers sold for \$7.50 to \$8 per ton to the canners.—W. F. Massey, Maryland.)

How many bushels of corn must you raise on your land in order to pay six per cent, on the money you have invested? Experts have answered this question as follows: A yield of 36 bushels to an acre on \$50 land; 42 bushels per acre on \$100 ground; 54 bushels per acre on \$200 ground; 60 bushels per acre on \$250 ground; and 72 bushels per acre on land valued at \$375 per acre.

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Soils & Field Crops

Conducted By A. E. GRANTHAM

The Use of Manure

How to get the best returns from the use of stable manure is not a new problem. However, there is little doubt that in many cases the farm manure might be applied to better advantage, particularly in certain rotations. Where the rotation consists of corn, wheat and grass, the general practice has been to apply the manure to the old sod before it is turned for corn. Thus the fresh manure is turned to the bottom of the furrow. The more soluble portions of the manure are thus placed below the surface so far that the corn plants while small do not reach the plant food readily. In humid regions, especially in the spring, the soluble portion of the manure tends to be carried down by the action of the rain. For this reason some favor the method of applying the manure to the grass land which is to be mowed that year. The clover and timothy mixture following the wheat crop is top-dressed about this season. The results have been very gratifying. The manure greatly stimulates the growth of the grass—in many cases doubling the yield—and a dense sod is formed. The next season this sod is turned for corn. Much of the coarser manure is still undecomposed and when turned under furnishes plant food during the summer for the corn crop. If the land is kept in grass two years some prefer to top-dress the field the second year. However, this is not practicable if the sod is poor. The best returns in grass through top-dressing will come when the sod is uniform. Experiments have shown that manure used in this way will give as good results for corn as if applied to the corn crop directly. The gain comes through the greatly increased yield of hay. The principle is sound, for the reason that sods are necessary to keep the land in a high state of fertility. The better the sod when it is turned, the greater the improvement in the soil. If you have never applied manure according to this plan, try it and note results.

Buying Lime

Since the ground limestone (unburned) is becoming more generally used each year it is well to remember that the prices paid for such material should not be more than half that of burned or hydrated lime. It takes two tons of ground limestone to give the same result in sweetening the soil that is produced by one ton of burned or quicklime. This is not an argument against ground limestone, but merely to call attention to the fact that it is less concentrated than burned lime, hence the price paid should be much less. Also there is an additional freight charge, to say nothing of the extra hauling in the case of the ground limestone. The limestone is more easily handled, is not caustic, may be applied at any time in any quantity without harmful results. These are some of the advantages of using ground limestone. But keep in mind the difference in concentration and in the prices.

Queries Answered

Buckwheat.—J. T. J., Pennsylvania, writes: "Can buckwheat be raised on the same ground after oats or wheat are taken off? Would it be possible to grow a crop of buckwheat after timothy has been removed?"
Buckwheat will mature in 60 to 70 days from sowing. Therefore it may be sown just late enough to mature before frost. Late sown buckwheat generally fills better than the earlier seedings. The average time of sowing in New

York and Pennsylvania is July, although it may be sown as late as the first of August in the southern portion of the state. It would be possible to follow timothy with buckwheat the same year in the latitude of Philadelphia, yet the labor of fitting a timothy sod for seeding to buckwheat would probably be out of proportion to value of the crop.

Rape for Pasture.—F. C. S., New York, writes: "Will you please instruct me as to the correct method of preparing the ground for sowing rape for pasture? I have an acre and a half of clay and to sow this spring."
Plow and fit the ground as you would for corn. If the land is poor it would be well to apply a liberal dressing of

well-rotted manure just after the land is plowed. Disk the manure in and finish with a leveling harrow. Sow the rape at the rate of 4 pounds of seed per acre. Then harrow in lightly. It is well to add a little clover seed at the same seeding—about 3 pounds per acre.

Improving Soil.—H. K. H., Michigan, writes: "I would like a little information concerning a field which we are trying to bring up to the standard of the rest of the farm. It is a long 8-acre field, through the center of one side of which is a swamp; the rest of the field is somewhat sandy, some of it quite light. We are going to drain the swamp this winter. What would you advise to grow in the swamp this summer? I intend to put one acre in strawberries and the rest in potatoes. Would potatoes grow here the first year after draining, or would I put in some other crop and get better results? Also, can you tell me whether or not we have an experiment station, and where I could send some samples of soil to be tested?"

Newly drained land usually gives better returns in corn than any other crop. It takes a year or so for such soil to get back into a normal condition, owing to the excess of organic matter and nitrogen. The corn crop will probably be the one to use for two or three years. You have a state agricultural experiment station located at Lansing, Mich. Send a sample of your soil to the Department of Soils, Michigan Agricultural College, Lansing. If your soil is acid it will be well to apply lime, particularly if you intend to grow clover.

John Deere Implements



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Remember that Syracuse cast shares are chilled throughout their entire cutting edge and point. The under side of point and cutting edge is also chilled—of vital importance in preserving the proper pitch and extending the period of usefulness.

Two bolts in the share instead of one and there is a rib on back of share that strengthens share and standard. Lug holds moldboard and share closely together.

In addition John Deere Syracuse Plows are built with long handles, which produce steady running qualities and make the plow handle easily.

Write us for free literature on the 1361 series—chilled plows, left hand, that work well in sandy and gravelly soils as well as in loam, turn and perfectly and have sufficient curvature to pulverize in stubble land.

Also the 1878 series, a complete line of right and left hand cast beam chilled plows; the 501 series, sloping landside chilled plows and the 16 series hillside plows, light weight and clean turning.



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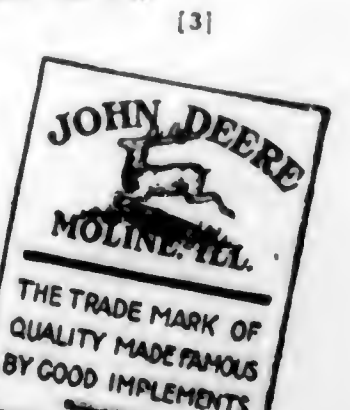
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POULTRY

Edited by F. V. L. TURNER

All letters, inquiries and requests in reference to poultry, should be addressed to the Poultry Editor of The Practical Farmer, Philadelphia, Pa.

Practical Poultry Talks

Bringing Up Young Chicks

Those of the youngsters which have reached the safe age, complete feathering, will cause less trouble for the same number than those that were handled from shell to this age.

The Leghorns, or more strictly speaking, any of the Mediterranean varieties, will feather out in about six to eight weeks; the American varieties take longer—eight to ten weeks, and are usually well up in size at this time. Ordinarily the matter of shelter and feed are the two essentials necessary to the rearing of the greater number of youngsters. Rain storms play havoc with the little fellows when on wide range. Without sufficient oil capacity to render them more or less waterproof, utterly unpossessed of rainy-day experiences mentally, no sense of protection and without the guiding care of a mother hen, deaths from heavy downpours are quite common on farms and with large colony housed flocks. Short range means more than shelter—that is, if the chicks can be rounded up at the break of a storm in a short time, the matter of shelter is of little moment, to the extent that the sleeping quarters will be sufficient.

Young chicks are helpless when water soaked, are extremely weak and helpless, will fall, stretch out and die if left through a heavy rainfall for three or four minutes.

If life is present when found, a warm place, and some absorbent material to lay them on is available, nearly all of those affected can be restored and will live.

Where youngsters are placed in colony houses, square corners should be avoided. One-inch mesh poultry netting, a foot high, tacked in a part circle in the corners, tacked to the floor, at side and back of the houses, will prevent crowding on chilly nights and save heavy losses from trampling and smothering. Of course, drafts must not be permitted. This square corner arrangement should not occur in any brooder, hover, colony house or temporary shelter where young stock is housed—any chick, from two to twelve weeks of age, will crowd into corners if it is not warm enough. It will be found that where deaths occur from crowding the larger chicks are usually killed, simply because these bigger fellows force themselves into the warmest corner and the smaller fellows pile on top. The netting serves two purposes, prevents crowding in a small space and gives air to those forced to the rear of the houses.

Feeding has already been prescribed, in previous issues, for the growing stock and need not again be repeated.

When placing the youngsters in winter quarters it will be well to remember that the change from free range to confinement must be more or less gradual—that is, do not attempt to put them in the laying houses from free range in one night. Put the females in the laying houses tonight, let them remain in the laying house yard tomorrow, the same sleeping quarters the next night, and then give them free range again late in the afternoon. Increase the length of time on free range each time, but make it every other day, then every third day until the middle of November, when by

natural processes, confinement will take place through egg laying, provided the youngsters were hatched at the right time, have been brought along properly and are so bred as to mature evenly.

Males should be removed when unmistakable signs—comb, feathers, carriage and other developments—are apparent; free range can be allowed those not intended for market.

The Practical Sized Flock of Poultry

MRS. V. D. WADE.

Nearly five years ago we said good-bye to our respective positions and planted ourselves on a neglected slate-stone farm, our main object being to grow and sell fruit. The poultry business goes well with fruit and we became very much interested in it—so much so that in five seasons our flock grew to 500 S. C. W. Leghorns and 100 S. C. R. I. Reds. We started in the poultry business with 20 miscellaneous hens. We purchased the Leghorn and Red eggs from bred-to-lay flocks, using the hens for setting and brooding purposes. We had many ups and downs, having experience with colds, gapes, roup and white diarrhea. However, we enjoyed the business, stayed right by it and easily netted an average of one dollar per hen. But fruit growing is our money making crop. We found that 600 chicks, properly taken care of, take lots of time. We were neglecting some of the work in fruit culture. Labor is high, and also very scarce. We are limited in amount of work, to be done properly, on account of such conditions. Also we bought nearly half our feed; had a rough road to pull it over and up hill in the bargain. Naturally, we found out that the size of our flock was impractical, so last fall we reduced it to 150 Leghorns and 75 Reds. We sold our pullets at an average of 30 cents per pound.

We keep the Reds for autumn and winter eggs and the Leghorns for winter, spring and summer eggs—giving us eggs throughout the year. We keep 50 2-year-old hens, or the breeding flock, separately, feeding them enough merely to keep them in good condition. It pays to do this. It means stronger chicks, higher per cent. hatch, minimum loss, minimum time in caring for them, and maximum profit.

The winter layers are kept in a roomy house, the scratching shed of which is 20x30 feet. From a nearby spring flowing water is piped to the house. Wheat in the morning, and oats at 10 o'clock, are scattered in a wheat straw litter. Broken corn is fed at night; 8 quarts of grain are fed to the 100 hens per day. A dry mash, the Cornell ration, is kept before them all the time, in a self-feeding hopper. Also they have plenty of grit, oyster shell and mangel beets, and some cabbage for green feed.

We use incubators, a 100-egg and a 504-egg, and brooders. In brooding, our best success comes from 100-chick size brooders. We make two hatches of chicks, the first in March and the second in April. The chicks are raised from information gleaned from the Practical Farmer. Feed sand and tepid water the first 24 hours. Give sour milk for first three weeks, and tepid water once a day. Feed mash moistened until crumbly with sour milk, all that will be eaten in three minutes, five times daily for the first five days; then enough to

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last 6 minutes four times daily for another five days. Then all that can be eaten in 10 minutes three times daily for 30 days. The following is our mash: Corn meal, 48 ozs.; middlings, 32 ozs.; hulled oats, ground, 21 ozs.; black pepper, 1/2 oz.; oyster shell meal, 1/2 oz.; Epsom salts, 1 oz.; bone meal, 1 oz. Chick size scratch feed must be used the first six weeks; after that, coarse scratch feed. Feed in litter. Chick grit should be kept in litter. Crops of chicks should be well filled at night; if not, increase feed. Green feed is necessary, such as lettuce, cabbage, or any growing grasses.

After the 30th day use the following growing mash: Bran, 10 lbs.; middlings, 5 lbs.; corn meal, 6 lbs.; ground oats, 5 lbs.; beef scrap, 4 lbs.; bone meal, 1 lb. Also the following grain mixture: White oats, 5 lbs.; cracked corn, 7 lbs.; whole wheat, 3 lbs.

Kill weaklings at once. Keep everything clean. Keep sufficient little hoppers to allow all chicks to eat at once.

Broilers are fed separately and rushed. Sell them at market price when weighing 1 1/2 to 2 lbs. We sell our old flock down to 100 in May, when the price is highest. Later on we make another culling, leaving nothing of the old flock for winter except the 50 in the breeding house. The flock of 175 for eggs are pullets, with a few exceptions.

Pullets are put in the winter house the first of September, and put on regular laying-ration. Until the egg-laying habit is formed we stimulate them sparingly with cooked liver and bone meal. Plenty of a balanced feed is necessary to get eggs. The house is sprayed frequently with lime-sulphur and carbolic acid, and whitewashed once a year.

To summarize our experience, we argue, first, one must love the poultry work to succeed. Second, one may succeed and make good money in poultry on a large scale, but poultry must be the main line and other things side lines. Third, the size of the flock depends on location and other work. For instance, we have plenty of flowing water and natural drainage, making the flock self-watering and healthy; on the other hand our road to market is rough; near market is small, and the feed we need above what we raise is expensive to haul in even after paying a high price for it. The high price and scarcity of labor make it such that we cannot afford to neglect a single duty in fruit growing to care for poultry. Plenty of help would make the truth different. Fourth, keep the size of flock consistent with your main line. Practice scientific methods. Equipment must be such as to require minimum labor and time in caring for the flock. It is the net income per hen that counts.

What We Are Asked

Ohio.

Worth While Suggestions

If four hundred red mites inhabit one hen undisturbed for one night, how many million will a hen house contain in one week? These days when Old Sol is tuning up for all bug life, is the time to begin a world war on lice and mites. All signs fail, some time—when the turkeys begin dusting in April make up your mind the lice are going to hold a reception.

A crippled or deformed chick is not profitable.

TELLS WHY CHICKS DIE

E. J. Reeder, the poultry expert, 4364 Reeder Bldg., Kansas City, Mo., is giving away a valuable book entitled, "White Diarrhea and How to Cure It." It contains scientific facts and tells how to prepare a simple home solution and cures this terrible disease over night and raises 98 per cent. of every hatch. All poultry raisers should write Mr. Reeder for one of these valuable FREE books.—Adv.

would seem that if you are keeping poultry for eggs the more eggs you can produce, of the right color, the more nearly you would arrive at a solution of your problem. Market poultry has its place on the farm and the kind that brings the best price is undoubtedly the better to raise.

Weak Germs.—E. J. New York, writes: "I am not satisfied with the number of chicks I get out of my 220-egg incubator, which runs steady. Nearly half the eggs do not hatch, although there are chickens in a good many. The chicks I get are mostly strong, so I cannot understand why the conditions are right for some eggs and not for others."

Purely a case of weak germs. Try other eggs from matings of yearling hens and young males. Your eggs appear to be from a mixed flock of hens and pullets, or pullets alone, one portion of which is younger than the other. If all other conditions are right the above is the explanation.

Out Meat! Gapes.—Mrs. E. P. Kentucky, writes: "You speak of oat meal and oat flake for baby chicks. Is oat meal simply ground oats, and what is oat flake? Is there anything I can use in the feed as a preventive for gapes?"

Oat meal is made from the hulled oats; oat flake is rolled oats. There is nothing that can be mixed with feed that will prevent gapes. Gapes are parasitic worms peculiar to the earthworm, and can be eliminated by liming the soil. Lime, ground or air-slaked, freely sprinkled in the chicken runs will kill the gape and angle worms. Two or three applications should be sufficient. It is better to turn the lime under and then lime again. If the chicks are kept penned up in wet weather to prevent them eating earthworms, which come to the surface then, much trouble will be prevented.

How Much Feed?—J. M. Z. Delaware, writes: "How much grain will a laying chicken or pullet consume during the year? Also, how many pounds of dry mash will she consume in a year?"

A layer will eat about 4 ounces of food per day, in cracked or whole grain and dry mash combined. She will vary the amount of grains or mash as she feels disposed. Some hens have been known to eat so little mash that it was scarcely noticeable, but these are usually poor layers. A good feeder lays best, is a safe rule; watch for the non-eaters and eat them, or sell them to market.

Eggs for Hatching.—Mrs. B. N. F. Virginia, writes: "Where can I get the genuine Rhode Island Red eggs and what terms? I always was afraid to send off eggs, for fear they might reach me broken, or would not hatch."

It is invariably the rule that purchasers of hatching eggs are guaranteed safe delivery. The package is usually opened in the presence of the express agent and broken eggs certified to by him. Then a claim is made for the broken eggs and the seller usually either sends enough eggs to make up the loss or returns their value in money. For addresses of Rhode Island Reds refer to our advertising columns.

World's Greatest Layers

They are Barron Winners which I own. Wyandottes, Leghorns, Buff Rocks, Reds, Morris Farm, R. 4, Bridgeport, Conn.

BLUE MOUNTAIN POULTRY FARM

Pure bred S. C. White Leghorns, \$2.00 per 13 eggs. S. C. White Leghorns, \$1.00 per 13 eggs. June 1st. James P. Achenbach, R. 1, Wind Gap, Pa.

EGGS that hatch from Runner Ducks, \$1.50, 15 cents each. White Leghorns, 28 Egg Trap Nested, \$6.00, 100 Hens, \$1.50. Prompt shipment. Satisfaction guaranteed. Solitude Farm, Cartersville, Va.

Chicks, \$1.50 per 100

"Tiffany's Superior," Silver Laced, White and Buff Wyandottes, Pekin, Rouen and Runner Ducks. 15 cents each. **ALDRAM POULTRY FARM, R. 23, Phoenixville, Pa.**

World's Greatest Layers

44¢ net profit per hen. One laid \$3.85. They are Barron Winners which I own. Wyandottes, Leghorns, Buff Rocks, Reds, Morris Farm, R. 4, Bridgeport, Conn.

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30 DAYS FREE TRIAL

Hill Colony Brooder \$30

Magic Brooder . . . 15

If you own a poor brooder it is your loss. When buying a brooder select one that will hold the fire continuously, maintain an even temperature and not leak gas. Chicks will not thrive with gas.

Buy a brooder with a perfect grate—one that will clean all the dead ashes out without poking the fire from the top. The Hill Colony and Magic Brooders have no equal for quality and efficiency. We guarantee them. Will cheerfully refund the money after 30 days trial if they do not all we claim. Write today for circulars describing same.

UNITED BROODER CO., 42 Bellevue Avenue, TRENTON, N. J.

HILLTOP QUALITY CHICKS

THAT ARE PURE BRED, BETTER HATCHED and From 200-EGG STRAIN FLOCKS

Big, strong, healthy, vigorous chicks that will mature into profit-paying flocks. Why not be sure of results? You can be. Just get Hilltop Quality Chicks now.

Leghorns	100	50	25
Reds and Rocks	\$12	\$6	\$3.25
	\$15	\$7.50	\$4.00

I positively guarantee pure-bred stock and safe arrival of chicks.

ILLUSTRATED CATALOG FREE

W. F. HILLTOP
BOX 4 PRENCHTOWN, N. J.

Baby Chicks and Eggs

S. C. White Leghorns, Young and Barred strains. Fine stock and great layers; none better. Eggs, \$1.25, 15¢; 100, \$12. Chicks, \$2 dozen, \$12.10; delivery guaranteed.

J. S. HAUPT FARM, EASTON, PA.

WHITE LEGHORNS

Husky, vigorous, farm grown birds. Barron Strain. We produce on our own plant every bird we sell, so can guarantee satisfaction to each customer. Eggs, \$1.00-15¢; \$4.50 per 100. Chicks, \$10.00 per 100. Delivery guaranteed. **Bourbon Red Turkey Eggs, 30 cents each.**

GLEN DALE POULTRY FARM, WELLSVILLE, PA.

Baby Chicks

Best five varieties for profit, chicks of quality and vitality. White and Barred Plymouth Rocks, Rhode Island Reds, and Indianapolis winners. You can depend on getting your money's worth from us. Hatching eggs, look at **JOHNSON CHICK HATCHERY, Box D, Sergeantville, New Jersey.**

BARRED PLYMOUTH ROCKS

"Hoosier Strain," Estab. 1892

First prize and champion winners at Chicago, Jan. 1916. Eggs for hatching from fine bred-to-lay stock, \$1.50 per 15; \$4 for 50; \$7 for 100. From Chicago 50 and Indianapolis winners, \$10 per 15; \$45 for 50; \$25 for 100. Prompt delivery and satisfactory hatch guaranteed.

EARL HOOVER, R. 21, Matthews, Ind.

EGGS

White Leghorns, \$1.25 per 15. Best strain. Circulars free. **Snanside Poultry Farm, Pittsfield, Md.**

None Better, S. C. White Leghorns

Combination of the best Leghorn qualities. Eggs and chicks in any quantities at prices that are reasonable. Get our line of poultry catalogues.

SUMMIT POULTRY FARM, Ridgely, Md.

Chicks That Live, \$15.00 per 100

"Tiffany's Superior," Silver Laced, White and Buff Wyandottes, Pekin, Rouen and Runner Ducks. 15 cents each. **ALDRAM POULTRY FARM, R. 23, Phoenixville, Pa.**

World's Greatest Layers

44¢ net profit per hen. One laid \$3.85. They are Barron Winners which I own. Wyandottes, Leghorns, Buff Rocks, Reds, Morris Farm, R. 4, Bridgeport, Conn.

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put it in a double boiler and cover with milk in the following proportions: To each tablespoonful of rice allow a scant teaspoonful of milk. Add a pinch of salt; cover, let steam until the rice grains are soft, when most of the liquid will have been absorbed. I use a double boiler because then the rice needs no watching. This dish must be served with cinnamon and sugar. To use cream makes it delicious, but, of course, is optional. I have a small glass bottle in which I keep sugar and cinnamon mixed. This saves much time. Any of the milk 'ice that is left over is very good when baked with the addition of an egg, custard, raisins and vanilla. Milk rice may also be warmed over by adding a little more milk and then it tastes "just as good as yesterday's."

Mrs. F. E. S. Grafton, O.—Our favorite rice dish is made as follows: Take 1/2 cupful rice, 1 1/2 cupfuls water, 1/2 teaspoonful salt; cook until rice absorbs all the water; 1 cupful milk, 2 tablespoonfuls flour, 1/4 teaspoonful pepper, 1/4 pound cheese, cooked together and stirred with rice. Put in baking dish and cover with 5 tablespoonfuls of bread crumbs slightly browned in 1 tablespoonful of butter. Bake 15 or 20 minutes in moderate oven. This dish contains as much nutriment as 6 pounds beefsteak.

Mrs. S. Y. H., Earlsville, Va.—My favorite dish made of rice is rice custard, and as the "proof of the pudding is in the eating thereof," I give my formula: Pass 1 cupful of cold boiled rice through a meat grinder with a fine cutter or through a coarse sieve; add to the rice 2 well beaten eggs, two-thirds cupful of sugar, 1 teaspoonful of butter,

vanilla or nutmeg as liked. Then add 2 teaspoonfuls of hot sweet milk and stir thoroughly. Bake in a pan of hot water until brown, which usually requires one-half hour.

Mrs. C. B. A., Atwater, O.—To make rice pancakes take 1 cupful of cold boiled rice, 2 cupfuls butter milk, 1 teaspoonful of salt, 2 level teaspoonfuls of soda, 1 beaten egg. Add flour to make the right consistency and bake on a griddle same as batter cakes. Serve with butter and syrup.

Try putting a cupful of cold boiled rice in your beef, veal or mutton loaf; also a handful in your vegetable soup.

Mrs. S. J., Kentwood, La.—Rice waffles are nice, made as follows: Sift 2 cupfuls of flour with 2 teaspoonfuls of baking powder and 1 of salt; work in 1 cupful of boiled rice, 1 egg, 1 cupful of milk and 1 tablespoonful of butter. Have the irons hot and well greased, and bake quickly.

Miss E. Z. Hatfield, Pa.—Probably my favorite dish made with rice is fried rice, and the receipt and way of preparing are as follows: Put 1 cupful of rice in 3 pints of boiling water, add 1 teaspoonful of salt and boil rapidly for half an hour. Then put into colander and drain thoroughly. Now press the rice 2 inches deep into a dish, put on a weight and allow to become cold. Cut into slices and dip first in egg then cracker crumbs and fry in hot lard. Serve with meat gravy or syrup.

(This Exchange brought a very large number of good receipts; wish we could have published more. Tried to select as large a variety as possible.—Editor.)

Our Fashions and Patterns

Full directions for making, as well as the quantity of material required, accompany each pattern. Patterns are perfect-fitting and seam allowing. When ordering write your name and address in full, state the number and size of each pattern you want, and send 10 cents for each. Address, FASHION DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.



7642.—Ladies' shirtwaist. Cut in sizes 34 to 42 inches bust measure. This waist has two styles of collars and can be made with or without the box plait.

7645.—Children's rompers. Cut in sizes 2, 4 and 6 years. The rompers close at the back and may have long or short sleeves.

7646.—Ladies' corset cover. Cut in sizes 34 to 42 inches bust measure. This corset cover can be made of one or two materials, as preferred.

7654.—Girls' dress. Cut in sizes 6 to 14 years. Striped and plain materials are combined in making this dress, which closes at the left side of front and has long or short sleeves.

7656.—Girls' dress. Cut in sizes 6 to 12 years. This dress closes at the back and has separate overblouse.

7658.—Misses' dress. Cut in sizes 14 to 20 years. The skirt of this dress, which consists of a gathered upper part attached to a circular lower part, is very attractive.

7675.—Ladies' apron. Cut in sizes 36, 40 and 44 inches bust measure. The apron closes at back and the skirt has four gores.

7649.—Ladies' skirt. Cut in sizes 24 to 32 inches waist measure. The skirt is cut in three gores and may be made with or without the belt.

7651.—Ladies' skirt. Cut in sizes 24 to 32 inches waist measure. The skirt is cut in one piece and has a circular flare at the low edge.

7653.—Ladies' house dress and cap. Cut in sizes 34 to 42 inches bust measure. The dress has a three-gored skirt with high or regulation waist line.



—"woman's work is never done"

Especially on the farm. Busy from morn till night—cooking, churning, feeding the chickens, getting the youngsters off to school, washing dishes and a thousand and one odd jobs. When the day is done and the lights are lit, out comes the darning basket. It isn't fair to mother. Let the whole family wear

DURABLE DURHAM HOSIERY FOR MEN, WOMEN AND CHILDREN

and darning will be a thing of the past. Durable as their name, this famous hosiery wears best where the wear comes hardest. Made of sturdy, stretchy yarn, shaped to fit, with extra strength at heels, toes and soles. Different weights for different purposes—a hose for every use, for every member of the family and at a price you'll be glad to pay. 10c, 15c and 25c a pair.

Ask your dealer for Durable Durham Hosiery. He ought to have it in stock, as we are the leading makers of low-priced hosiery in the world. Have him show you the 25c mercerized hose. Don't forget the name—Durable Durham.

DURHAM HOSIERY MILLS Durham, N. C.

Write us a postal today. Let us mail you this big book of the year. It contains the latest styles in wall papers—the most beautiful designs shown by many years. Just send your paper and you will receive this big book of the year. Our remarkably low prices begin at 10c for a double roll.

See papers a big room. This big new book tells how you can do the work yourself, quickly and easily. It shows the latest styles in wall papers—the most beautiful designs shown by many years. Just send your paper and you will receive this big book of the year. Our remarkably low prices begin at 10c for a double roll.

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A HEALTH INSURANCE POLICY TOWER'S FISH BRAND REFLEX SLICKER \$3 when it rains TOWER'S FISH BRAND A. J. TOWER CO. BOSTON

Our Barter Column. This column is for our subscribers only—no Real Estate Agents, Dealers or Manufacturers. 2 cents per word; no advertisement less than 50 cents.

Terry Followers wanted an advertised March 15th. Invalids compelled to abandon their work have acquired health and efficiency here while helping me demonstrate Terry's teachings in a favorable environment. EMERY ANDREWS, Granville Center, Bradford Co., Pa.

Would exchange Ayahires, Advance Registry. Stock from a herd established 32 years, for bird seeds or other. Correspondence invited. E. T. MARTIN & SON, Ulster, Pa.

Exchange, Central Massachusetts, 136 acres. Good farm, well located. \$5,000 cash. Consider smaller well improved farm, vicinity Delaware. Value, \$1,000. \$5,000, part payment. F. HAYES, E. Brookfield, Mass.

Wanted Farmhand, who needs a home and is willing to help make it. Must be free from liquor and profanity. State wages. HUGH M. MERRICK, Cedarville, Ohio.

\$1000 buys my 40 acre farm, 6 room dwelling. All good soil. Good water. My husband is blind, cease of selling. MARY C. KINGSBORN, E. L. North East, Md.

K18109—Serviceable Walking Skirts of navy blue or black serge. Made with a plait on each side and with panel back; girls top; stitched scalloped buttoned with bone buttons at each side of the front. Fastened on one hip; finished with a deep hem. Waist-band sizes 25, 27, 29, 31 and 33 inches. Front lengths, 37, 39, 40, 41 and 42 inches. Order this Skirt with the understanding that if not satisfactory in every way it can be returned at once and your money will be refunded. Price—\$3.75, postpaid.

Our Spring and Summer Catalogue will be sent free, on request.

STRAWBRIDGE & CLOTHIER PHILADELPHIA

The Practical Farmer Live Stock and Dairy Section

How to Judge Dairy Cows

By H. H. DEAN

To judge dairy cows satisfactorily is one of the most difficult tasks a judge can undertake. A conscientious judge tries to satisfy himself and also the owner of the cow. Very often this is an impossible task—more particularly that of satisfying the judge's own conscience. The reason for this is, there are no certain signs of milk-producing capacity. While there are general indications of milking power, no one "sign," and no combination of "signs" is infallible. Men are not nearly so sure as they once were on this subject—say twenty-five years ago, when it was quite common to give "demonstrations" with chart or with the live cow to audiences of dairy farmers. These lectures and demonstrations were looked upon as oracles of "cowology." However, since the advent of testing cows by means of scales and the Babcock test, these men are not nearly so popular as they once were, for the reason that many of the theories formerly put forward in judging cows have been proved to be more or less fallacious. Among these we may mention the "resutcheon," or "milk mirror," and the "triple wedge" theories. At one time these theories were very much in vogue when judging cows, but they have been largely "scrapped," although we find traces of them in the standard descriptions of the various dairy breeds.

This leads me to say that a second function of the judge of dairy cows is to decide whether or not the animal conforms to the standard description of the breed to which the animal belongs; or decide the relative standing of the animals exhibited. In fact, when judging pure-bred dairy stock, the chief work of a judge is to decide on the question of comparative nearness to the "scale of points" laid down by the breeders' association. No man is fit to judge registered stock who is not reasonably familiar with the standard description of the breed and knows how to apply his knowledge to the animals before him in the judging ring. He who tries to combine a standard, and some preconceived notions he may have about the "signs of a milker" is likely to fall down when acting in the capacity of judge.

While it may not be practicable on all occasions to take a scale of points into the show ring for each breed and apply this to the animals exhibited, the best judging we have ever seen at an exhibition was done in this way on the Island of Jersey at the great summer cattle fair, when the pick of the Island herds were exhibited. Each and every animal was scored according to the standard scale of points and the prizes were awarded on this basis.

Out of the misty, foggy, wordy warfare on this question during the past quarter of a century have come a few points which are worthy of careful consideration by every man who wishes to become a proficient judge of dairy stock that are likely to be profitable producers of milk and its products. What we shall have to say is not intended for the

judge of pure-breds, although the principles are sound for any and all dairy cows.

We shall divide the topic into four headings for ease in comprehending and remembering:

1. A cow must have a good constitution, with plenty of vitality to stand the strain of reproduction and large milk production. A cow that produces a calf yearly and at the same time gives from 6,000 to 10,000 lbs. of milk, or makes from 250 to 400 lbs. of butter, or its equivalent in milk fat, is under a continual heavy strain, which saps the constitution, and in a short time she "breaks down" unless strong and rugged.

The indications of good constitution are a well developed heart and lung region, hollowness behind the elbows being an indication of predisposition to tuberculosis and other lung troubles; a fairly mellow skin and soft hair, as these token good blood circulation. Easy, regular breathing is also important. If on placing the ear to that part of the body where the lungs are situated a harsh, rasping sound is audible, such a cow should not be purchased nor placed high in the show ring. Short, panting breath under normal conditions, is also an unfavorable sign.

2. The second thing to be looked for is good digestive capacity. As the capacity of a cow in milk production depends to a large extent upon her capacity to change food into blood and blood into milk, we need a cow with a good sized middle-piece, or what is sometimes called a large "bread-basket." A cow with a "tucked-up" middle-piece is seldom, if ever, a large milker. The quantity of milk coming from the hind end, or udder, of a cow, is governed to a great extent by the amount of food entering the front end, or mouth, assuming it is properly digested and assimilated by the stomach and allied parts. Minor indications of good digestion are large mouth, strong lips, plenty of space between the hip or hook bone and the last rib, together with good appetite. A "mincing" cow is seldom a profitable cow.

3. Large milking capacity is the third point to look for. Here, however, we are largely in the dark. Possibly the best guides are udder development, and the so-called "mammary" or "milk veins." A large udder is not necessarily associated with large milk production, although it is true, "no udder, no cow." We remember attending an auction sale where a cow with a very large udder was put up for sale. The auctioneer remarked that the only reason the owner had for selling this particular cow was the fact that every time he milked her it was necessary to get out the wash tub to hold the milk, which was very inconvenient. We had an opportunity to weigh the milk of this cow for some time after her purchase and she proved to be a very ordinary milker. Moral: When buying cows at a sale, don't pay too much attention to the size of the



When the Big Guns Roar

their concrete foundations and ramparts are called upon to withstand unusual concussion and strains. The stone, sand and cement must be of unquestioned quality.

In the fortifications at Egmont and Mullet's Keys, Forts Hancock, Wadsworth, Slocum, Monroe, Strong, Mott, Totten and Schuyler and in making concrete improvements at the Brooklyn, Portsmouth, Boston, Norfolk, Charleston, and League Island Navy Yards; at West Point, Annapolis, and elsewhere, the United States Government has used hundreds of thousands of barrels of

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—the cement that is tested hourly by chemists; that is the product of 25 years experience in cement-making; the cement that comes in bags stamped "Guaranteed" and that must always more than meet every recognized test before it can be shipped.

Ask the ALPHA dealer in your community for the 80-page illustrated book, "ALPHA Cement—How to Use It," which gives detailed directions for making dozens of everlasting farm and home improvements with ALPHA, the Guaranteed Portland Cement. If you don't know the ALPHA dealer, write us, mentioning what you are planning to build. Address Dept. E. ALPHA PORTLAND CEMENT CO. General Offices: Easton, Pa. Sales Offices: New York, Philadelphia, Boston, Pittsburgh, Baltimore, Savannah.

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Natco Imperishable Silo "The Silo that Lasts for Generations" Its hollow, vitrified, clay tile are impervious to air and moisture—they preserve the silage sweet and juicy. The dead air spaces in the wall resist frost—making it the silo for severe climates. The continuous reinforcing bands hold it in the mortar hold it in a grasp of steel. It is a silo of efficiency, and a silo you'll be proud of. Send for our silo catalog describing it fully. Also get our splendid new book, "Natco On The Farm," describing other farm buildings made of Natco Hollow Tile and just as efficient. Both books free. We have many farm building plans to submit, and will help you solve your building problems, free. What are you going to build? Let's hear from you. Write today.

Natco Silo Wall. Note perforated shell, providing firm anchors, age for mortar joints.

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APRIL 25, 1916

LEDDY

APRIL 25, 1916

On the above date we will sell, for Mr. Wm. Leddy, of Fairmount, N. Y., his entire herd of about 58 head of Holsteins. This is all registered stock and all over six months of age will be tuberculin tested.

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Liverpool Sale & Pedigree Co., Inc., Liverpool, N. Y.

who will on request send you a copy of "The Breeders' Horn" which will contain complete information of this sale.

udder, nor to what the auctioneer says. The udder should be well-balanced, flexible, have good sized teats evenly placed, the veins on the udder and under the abdomen should be prominent, indicating good flow of blood to the udder.

Minor indications of milking capacity are bright eye, dishing forehead, prominent backbone, etc., all of which are supposed to indicate strong development of the nervous system, as it is assumed that milk is in some way a product of nervous force.

4. The fourth and last point we shall mention is beauty of form and stylish appearance. A proverb frequently quoted with reference to cows, "Handsome is that handsome does," is very important, although we need to remember that beauty and style in a cow have a market value and hence need some attention at the hands of dairymen. We instinctively take to the beautiful, and are attracted by that which is called style. While it is not advisable to lay too much stress on these points, it is a wise policy to breed and buy as pretty and stylish animals as possible without sacrificing utility.

It is difficult to get men to agree as to what makes up those qualities known as beauty and style. What one man would call pretty and stylish another would consider ugly and lacking in style. This is probably a wise provision in nature, otherwise a few individuals would receive all the attention and be in such great demand that the equilibrium of the world would be unbalanced.

Having the foregoing reservations in mind, we would venture to assert that the points of beauty and style are made up of fine, clean-cut head, fine horns, bright eyes, medium length and fineness of neck, fine shoulders, large barrel, fairly large, well-balanced udder, broad loin and hips, long level rump, fine, long tail with good switch, short, straight, nicely rounded or flat legs, good feet, together with a pleasing color or harmonious blending of colors, combining also an alert, stylish movement.

If a judge has the foregoing in the animal he selects for his own use, or for placing among the prize winners in a show ring, he may not be far astray, but after all, the final test of superiority is the scale and testing the milk for fat or other solids.

Free from Foot-and-Mouth Disease

On March 31st the United States Secretary of Agriculture, issued an order removing the quarantine from the last area in the United States under suspicion on account of the foot-and-mouth disease. The whole country is now free from quarantine and restrictions against the shipment and movement of live stock on account of this dreaded disease.

As a result of better understanding between the State and National Governments, representatives of the Department of Agriculture believe that many of the obstacles which confronted the authorities in the past outbreak would not be encountered in dealing with any future occurrence of the disease. The veterinarians, however, will not abate their watchfulness for some time. Examination of animals and animal products offered for import will continue to be unusually strict. The Department, moreover, particularly urges all farmers and cattle handlers to notify their state veterinarians and the Department of any suspicious cases of sore mouth combined with lameness in their animals. Those in charge of the eradication work are confident that the disease is wiped out, but will use every precaution to detect and control sporadic cases that may develop in remote districts.

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Lameness in Horses

J. H. REED, V. S.

(Continued from April 1st issue.)

The manifestation of lameness is shown by the animal in two ways—first, during repose; second, during movement. In some cases the symptoms are more marked while the animal is standing, as in many cases of foot lameness. For example, a horse will continually point (place one foot in advance of its fellow and it upon the toe) or even elevate the foot which is suffering pain. If both feet are diseased he will probably point, or elevate them alternately. When a horse showing these symptoms is moved, the degree of lameness, in many cases, does not appear equivalent to the amount of pain expressed when standing. In other cases the horse will stand perfectly sound, although in the majority of cases the pastern of the lame leg is held more upright than that of the sound one, as if he feared to put as much weight on it; but when made to move the lameness becomes apparent. Again, in many cases, the animal comes out of the stable apparently sound, but after being driven a variable distance he shows well marked lameness. Others leave the stable quite lame and gradually become freer in their action, frequently all symptoms of lameness disappearing with exercise. Such cases are apt to deceive, hence the examiner should take all possible precautions against deception. Some horses show lameness only when they turn around. They may go sound when led straight to or from the observer, but when turned sharply around they at once manifest their unsoundness. When an examiner observes a man who is very careful when turning his horse he should compel him to turn the animal quickly.

Slight chorea or stringhalt is seldom detected except during the turn, and in some cases is shown only when the horse turns one way. In other cases lameness may exist in two or more limbs, but not equally well marked. In such cases the animal may endeavor to save the lame limbs by throwing his weight on them in such a peculiar manner that it requires great care to distinguish the true nature of the case and form a correct opinion. Again, some horses walk down hill in such a peculiar manner that they appear to go lame. This is generally called a three-cornered walk. The animal sways from side to side very awkwardly, his hindquarters being turned to one side or the other, going forward almost sideways, as some horses act going down hill holding back a heavy load. A touch of the whip will generally cause him to improve his gait, which at once shows that it is not lameness, but laziness, from which he is suffering.

The symptoms of lameness shown during repose are very important, and often diagnostic. A horse suffering acute pain in one forefoot will usually point it. This is done for the purpose of relieving the weight from the foot, hence lessening pain. It throws the flexor tendons into a state of relaxation, removes weight from the foot and removes tension and pressure from the painful part. This pointing does not apply to all forelimb lameness, but is usually noticed when the trouble is below the knee. The pointing (if we can call it such) of elbow or shoulder lameness is characteristic. The forearm is extended, the knee flexed, and the foot held on a level with, or a little behind its fellow. In severe shoulder lameness the pointing is usually backward, the whole limb becomes relaxed, the knee bent, and the foot placed well behind its fellow, sometimes the toe only touching the ground, the whole limb being held in a semi-pendulous position, on account of the inability of the muscles to elevate it and bring it forward without pain.

Where the lameness is in a hind leg the patient may stand with it flexed, knuckled over at the fetlock, or with the foot entirely off the ground. When he stands with the lame leg in advance of the sound one the position generally indicates disease in or below the hock. A horse with acute pain in both forefeet will stand with his hind feet well advanced under his body, resting one forefoot then the other. Should the pain be in both hind feet he will stand with the forefeet well back beneath his chest, his body pushed forward and head held low, in order to remove his weight as well as possible from the seat of pain. He will ease one hind foot and then the other, and, if pain be excessive, will breathe heavily and show other symptoms of distress. Pain in both hind feet often interferes with the act of urination, by preventing the stretching of the body, which is so characteristic of that act in the horse. In such cases he will endeavor to stretch himself, will elevate his tail, but with a groan quickly assume his former posture and suddenly lift his feet alternately. From this fact it is often supposed that a horse suffering acute pain in both hind feet is suffering from acute disease of the urinary organs. (To be continued.)

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Care of the Brood Sow

The number of animals the farmer will have to dispose of next fall will depend largely upon his ability to bring through in good condition the litters farrowed in the next two months.

The brood sow should be fed during the winter so as to be in a thrifty, gaining condition. Thin or overfat sows are undesirable. The sow should gain from 50 to 75 pounds in weight during pregnancy. In order to avoid an overheated or feverish condition of the sow the ration should be decreased three or four days prior to farrowing. A warm slop composed largely of wheat bran is a good feed at farrowing time to keep the sow in a cool condition and to regulate the digestive system.

The sow should not be disturbed at farrowing time but should have assistance in case of difficult parturition. Young pigs are easily chilled; hence if the weather is cold they should be thoroughly dried or placed in a warm basket until they can care for themselves. The sow should have a separate pen at farrowing time. The pen should be clean; there should be a minimum litter, as pigs may be lost and crushed in an excessive amount; and a 2x4 farrowing rail 6 to 8 inches from the floor, should be provided.

After farrowing, the sow should be fed lightly for a day or two, when a ration to stimulate milk flow should be fed. A ration which has given satisfaction for this purpose at the Pennsylvania State College School of Agriculture and Experiment Station consists of four parts corn meal; three parts middlings, one part tankage; one part bran. Plenty of sunlight and good ventilation without drafts in the farrowing pen and a suitable place for the sow and pigs to exercise are excellent.

In the latest report of the dairy and cold storage commissioner of Ontario there is published, as a result of the investigations of the Cornwall, Ontario, dairy record center, contrasts between the profits derived during the lactation season from 43 cows of selected herds with 50 cows of poorer herds. The 43 selected cows showed a total net profit of \$1,540, while the poorer cows gave a profit of only \$615.

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THE New Sharples "Suction-Feed" is the only cream separator which eliminates guess work from cream production. All other separators have to be turned at exactly the speed indicated on the crank or they will lose from 7 to 13 pounds of butterfat per cow per year. The Purdue Experiment Station and other scientific investigators have proven these figures (see Bulletin No. 116, Vol. 13.)

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Feeding and the Making of Balanced Rations

By H. H. DEAN Author of "Canadian Dairying"

(Articles in this series appeared in our issues of March 15th and April 1st.)

III.—Uses and Composition of Feeds

The first question an intelligent feeder asks himself is, "What do I expect or wish this animal to do—give milk, put on flesh and fat, grow bone and muscle or wool, lay eggs or do work?" Having decided what is expected or what the feeder wishes the animal to do, the next thing is to feed the animal accordingly, so far as science and practice are able to throw light on the problem, though it must be admitted that there is yet much to be known in this connection.

Briefly, feed is given to an animal for one or more of the following purposes:

1. Growth. This requires especially, muscle and bone forming materials, and probably material of a special kind, for best results. Formerly it was considered that practically all feeds contained sufficient ash or mineral matter to supply the animal needs; and also that the source of protein made little difference to the animal. Recent investigations indicate that "the question of mineral balance in animal rations is one of great importance." The editor of the American Station Record, in a recent number, says: "The only difference formerly recognized in the constituents of different feeding-stuffs, including the protein, was a difference in digestibility. But when proteins from different sources came to be isolated and studied, their constitution was found to differ materially and also their effect in the nutrition of the animal. This has been shaking the old confidence in the mere analysis of feeds as indicating their value in animal feeding. The proof has already been furnished that the constitution of the protein molecule is of fundamental importance in determining its nutritive

cal basis." The foregoing is another way of saying what we pointed out in the first article, that chemists and cows do not always agree in their conclusions as to the relative value of feeds. However, we must not throw away entirely the teachings of animal chemistry, simply because cows or other animals do not always agree with its conclusions. Let us hold fast to that we have, until new and better truths are established.

2. The second great use of feeds is to produce, by means of animals, human foods like meat and milk; or valuable material for clothing, such as wool. Both muscle and heat formers are concerned in this line of production, but it is generally agreed that the protein or muscle-forming part of feed is of greatest importance in this particular work. Cows, especially, need plenty of easily digested proteins in order to make milk economically. Lack of sufficient protein is one of the most common faults in the rations as fed by ordinary feeders. The same principle applies in feeding hens to make them lay. A recent experimenter reports excellent results by adding cotton seed meal to the mash for laying hens.

3. The third use of feeds is to repair body wastes and maintain the body temperature. Cheaper feeds, such as corn silage, straw and roots may be used as a "maintenance ration," because in this case we simply wish to keep our animals at maintenance level. Carrying horses over the winter for the following spring and summer work is an example of this kind of feeding. We cannot, as a rule, in ordinary farm practice, afford to feed such animals on expensive feeds like hay and oats.

4. The fourth chief use of feeds is to furnish energy to do work. In this case the heat formers are very important.

The following table shows the proportions of dry matter and digestible nutrients in a number of common feeds used on farms. This table should be preserved for future reference, so that read-

Kind of Food	Total dry matter	Pounds of digestible nutrients			Nutritive Ratio
		Protein	Carbo-hydrates plus (fat x 2.25)	Total	
Green fodder corn, 1 lb.	0.29	0.010	0.125	0.135	1:12.5
" peas and oats, "	0.16	0.013	0.076	0.089	14:2
" red clover, "	0.29	0.029	0.164	0.193	15:6
" alfalfa clover, "	0.23	0.039	0.198	0.237	13:5
Corn silage, "	0.21	0.009	0.129	0.138	14:3
Potatoes, "	0.21	0.009	0.129	0.138	14:3
Mangel, "	0.19	0.011	0.056	0.067	15:1
Sugar Beets, "	0.15	0.011	0.104	0.115	13:4
Carrots, "	0.11	0.008	0.082	0.090	14:10
Turnips, "	0.10	0.010	0.077	0.087	17:7
Timothy hay, "	0.87	0.028	0.465	0.493	14:6
Mixed hay, "	0.57	0.002	0.499	0.501	15:8
Red clover hay, "	0.85	0.028	0.465	0.493	14:6
Alfalfa hay, "	0.92	0.010	0.423	0.433	13:8
Corn fodder, "	0.58	0.021	0.373	0.394	12:9
Corn stover, "	0.60	0.017	0.340	0.357	12:9
Pen straw, "	0.86	0.043	0.341	0.384	17:9
Wheat straw, "	0.50	0.004	0.372	0.376	13:6
Oat straw, "	0.91	0.012	0.401	0.413	13:7
Corn, (grain) "	0.59	0.079	0.761	0.840	14:7
Wheat, "	0.80	0.102	0.750	0.852	17:2
Rye, "	0.88	0.089	0.700	0.789	17:1
Barley, "	0.89	0.087	0.692	0.779	17:9
Oats, "	0.89	0.092	0.688	0.780	18:9
Buckwheat, "	0.87	0.077	0.588	0.665	16:9
Peas, "	0.50	0.108	0.534	0.642	13:2
Corn and cob meal, "	0.85	0.044	0.438	0.482	13:5
Wheat middlings, "	0.88	0.128	0.607	0.735	14:7
Low grade flour, "	0.88	0.082	0.688	0.770	15:3
Gluten feed, "	0.92	0.194	0.607	0.801	14:2
Gluten meal, "	0.92	0.258	0.607	0.865	11:6
Lined meal (new process) 1 lb.	0.90	0.282	0.444	0.726	11:2
Cotton seed meal, "	0.92	0.372	0.444	0.816	11:2
Sugar beet pulp, "	0.10	0.000	0.073	0.073	14:2
Apple pomace, "	0.238	0.000	0.175	0.175	11:9
Skim-milk (separator) "	0.094	0.029	0.069	0.098	12:7
Buttermilk, "	0.10	0.029	0.069	0.104	11:7

To find the pounds of nutrients in any given number of pounds of any feeding-stuff multiply the weight of nutrients in one pound as given in the table, by the pounds fodder, meal, etc., which you expect to feed.

efficiency, some of these compounds being quite defective for maintaining life, while others are highly efficient. The scientific basis of these differences is gradually being established, and in the meantime caution is exercised in the calculation of rations on the mathemat-

ical basis. The foregoing is another way of saying what we pointed out in the first article, that chemists and cows do not always agree in their conclusions as to the relative value of feeds. However, we must not throw away entirely the teachings of animal chemistry, simply because cows or other animals do not always agree with its conclusions. Let us hold fast to that we have, until new and better truths are established.

(To be continued.)



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Queries Answered

Udder Trouble.—W. O. I., Delaware, writes: "Cow had mammitis last spring. I treated it and she got well and strong, but one hind quarter remained swollen and yielded only a thin, watery fluid for a long time. Then after a time it swelled again and the test commenced to yield matter when pressed. This condition still exists. Every time she is milked this test yields a lot of yellow, thick matter and one part of the quarter bulges out and is somewhat soft in the center, but not very sore. She will be due to calve in March. Will the disensed quarter be all right then?"

It is not probable that the quarter will ever again be active. The secretive properties are practically destroyed. The bulging part of the quarter indicates an abscess almost ready to break. If not broken it should be lanced freely to allow escape of the pus and the cavity flushed out two or three times daily until healed with a 4 per cent. solution of carbolic acid. Drain the pus out of the test two or three times daily. It will be wise not to breed her again, and whether or not it will be profitable to get her dry as soon as possible after calving and fit her for the butcher must be decided by yourself.

Itchy Legs.—H. J. J., Ohio, writes: "I have a pair of Clydesdale geldings that are troubled with itchy legs. They stamp, rub their legs with the opposite feet, bite them and sometimes rub or bite so hard that they draw a little blood."

Some horses, especially those with rather round and fleshy legs with feathering of coarse quality, are subject to itchy legs. Make a solution of corrosive sublimate 20 grains to a pint of water. Heat some of it to about 120 degrees Fahr. and rub well into the skin once daily until itchy legs cease.

Injury to Teat.—W. B., Pennsylvania, writes: "Last summer my Holstein cow met with an accident which tore a portion off the end of the teat. I treated it and after a time it healed, but in the meantime the quarter became inactive. I notice that a milky matter still escapes from the teat."

No doubt the sphincter muscle (the muscle with circular fibers which surround the point of the teat and keep the vent closed) was removed by the accident and while it is very probable that the quarter will again become active after next calving, it is very probable that the milk will escape from the teat as it reaches it, as there is practically an open vent. Nothing can be done to overcome this except applying rubber bands to the teat between milkings, and this usually causes trouble, as the bands must be quite strong to prevent the escape of milk, and the constant pressure interferes materially with circulation. Of course, if the teat muscle was not removed the teat should work all right. All that you can do is to dress the point of the teat three times daily with an antiseptic, as a 5 per cent. solution of carbolic acid, in order to get it thoroughly healed.

Skin Trouble in Pigs.—W. A. C., Pennsylvania, writes: "Pigs have been kept in a pen the roof of which leaks and has an earthen floor. It has been impossible to keep them dry and comfortable. They have some skin trouble. They seem to be itchy, and scales and scabs have formed over their backs and other parts of their bodies."

This trouble has doubtless been caused by the general surroundings. Fix the roof so that it will not leak, build a plank platform for them to sleep on. Dress them twice daily with one part carbolic acid to 30 parts sweet oil. Allow daily exercise in the open air.

Crippled Pigs.—M. E. Y., Pennsylvania, writes: "Pigs three months old kept in a cold at all, have been fed on chopped peas, oats and rye in equal quantities, with milk and water to drink. They did splendidly and became fat, but lately they seem to be losing the use of their legs."

This crippling is due to too high feeding and want of exercise. Purge each with 2 ounces of Epsom salts and follow up with 3 grains of nux vomica three times daily to each. Feed on milk, shorts and raw roots, as soon as they can walk, see that they get plenty of exercise in the open air.

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1st—If you are still using some gravity or setting process of creaming—

BECAUSE your cows have likely freshened now and your supply of milk is greater.

BECAUSE your spring work requires every minute of your time and a good cream separator will be a great time and labor saver.

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BECAUSE the losses of the poor separator from incomplete skimming, and the tainted product of the hard-to-clean and unsanitary separator mean most when your volume of milk is the greatest.

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BECAUSE the De Laval Separator of today is just as superior to other separators as other separators are to gravity setting.

Let the De Laval start saving cream for you right now. See the nearest De Laval agent at once, or if you do not know him, write us direct for any desired information.

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Included in the herd is Sir Prilly Walker and he and about 50 of his daughters will be sold. Write for full particulars of this sale to

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Carbide Lighting and Cooking Plants Now Out-Sell All Others

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For fifteen years, country home families have been testing lighting plants of many types. Literally hundreds of different kinds have been given thorough trials on thousands of farms.

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In short, Carbide Light Plants give you not only ideal light for country home requirements, but gas for cooking as well—both conveniences equal to the best used by the cities millions.

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In This Issue: Building the Dairy Herd

The Practical Farmer

PUBLISHED
CONTINUOUSLY
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Volume 112
Number 9

PHILADELPHIA, MAY 1, 1916

50 Cents Per Year
3 Years for \$1.00



The First Step Toward Underdrainage

To Light Your House and Barns

To Cook Your Meals



Carbide Lighting and Cooking Plants Now Out-Sell All Others

You Will Now Find Carbide Lights in houses, barns and out-buildings on over a quarter of a million farms—and

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The First Step Toward Underdrainage

Lessons from Experience with Cabbage and Potatoes

M. L. RHODES.

A few years since I plowed up a plat of ground on an island in the Allegheny river and planted it in cabbage. The ground had not been cultivated for possibly a quarter of a century, and produced each season a dense growth of tall weeds and wild grass. Immediately following the time of planting there was a long dry spell, and on account of much sand in the soil, which did not hold moisture, less than half of the seed germinated and grew. The rows being 2 feet apart each way, and the patch containing a half acre, it was necessary to transplant about 3000 plants to fill the vacant places. The plants used were rather large and were taken from a bed that showed a small percentage of club root. Of course, the diseased plants were discarded, and no lime was used in setting the others. The resulting crop was remarkable. Large, solid heads of the Danish variety filled each row; and during the growing season, less than one-tenth of one per cent. club-rooted stalks appeared in the patch. These were destroyed upon first appearance.

The next year the old stalks and decayed leaves were plowed under and the patch again set in cabbage plants, the plat being extended farther in one direction than had been planted the previous year. Large, vigorous plants were used, and the small percentage of club-rooted ones thrown away. Again the resulting crop was remarkable—but in contrast with that of the year before. On the extension plat there was a showing of 25 per cent. club root, while on the ground planted the year before, fully 75 per cent. of the cabbage was club-rooted.

Experience led the way, and logical deductions were then drawn thus: 1. A succession crop of cabbage will most likely prove a failure. 2. Club root may be successfully detected in strong, vigorous plants when pulled from the bed for setting. 3. Decayed stalks, roots and leaves undoubtedly produce club root. The percentage of club-rooted plants discarded when taken from the bed was no greater the second year than that of the first. The second year, plants from the same bed were used in both the 25 per cent. and the 75 per cent. diseased plats. 4. The disease may be conveyed from one part of the field to another by the harrow or cultivator, or by any implement or tool which carries ground from one place to another. The extension plat was evidently infected by soil particles from the old patch. 5. As suggested preventive measures, destroy the roots and leaves by decomposition in a heap with the aid of a liberal quantity of lime, beginning the destruction as soon as the cabbage is cut; alternate cabbage with other crops; use a new plat each year; always apply lime in sufficient amount, as generally recommended for club root, when preparing a seedbed for the growing of plants, and when getting the field ready for setting plants.

Here is another experience—this one with potatoes: Two parties, one being the writer, rented a factory lot, which had not been used for agricultural or garden purposes for upward of twenty years. The lot being divided, each one planted his portion in potatoes. One portion was planted with good seed, apparently free from scab; the other one with seed badly infected with that disease. The scabby seed was treated with corrosive sublimate, but the good seed was planted without treatment. At digging time it was found that the treated seed produced potatoes absolutely free

from the scab disease; while the other seed, which seemingly needed no treatment, yielded a crop so scabby that it was unsalable.

Again experience was the tutor, and these deductions were drawn as stepping stones to success: 1. Scab may be due to foreign causes; it may remain in the ground many years after infection; it may be a condition of the seed without visible evidence. 2. Good seed, apparently free from scab, planted in ground free from known infection, will not insure a crop of scabless potatoes. 3. Diseased seed may be used with good results if treated and proper precaution taken. 4. Absolute control of scab is possible; with but little labor and expense.

Pennsylvania.

Our Prize Awards for April

The prize awards for published manuscripts contributed by our readers for the month of April, are as follows:

DEPARTMENTS OF LIVE STOCK AND DAIRY AND POULTRY.

First prize (\$6.00), "The Practical Sized Flock of Poultry," by Mrs. V. D. Wade, page 174, April 15th issue.

Second prize (\$4.00), "Care and Feeding of Goslings," by Miss M. A. Herold, page 154, April 1st issue.

DEPARTMENTS OF GENERAL AGRICULTURE AND HORTICULTURE.

First prize (\$6.00), "Planting and Care of the Apple Orchard," by E. C. Brinser, page 145, April 1st issue.

Second prize (\$4.00), "Beans as Easy Money," by R. J. Holliday, page 169, April 15th issue.

Locust Trees Recommended to Prevent Soil Erosion

The gullying of land can be checked by planting trees. The head of the gully is the important point to attack, since it is there that the gnawing back takes place. A small gully just starting can sometimes be stopped by throwing in stones and brush, although such methods are only temporary, as such material is easily washed out.

The best plan is to make a dam near the head by setting a board on edge

across the gully. Piling flat stones will tend to hold the soil, also. Tree seeds can then be planted or small trees set out. The soil must be held until the trees are well started.

The department of forestry of the Pennsylvania State College, advises the planting of black locust to prevent erosion. Trees of that species have a wide-

spreading, compact root system that is well fitted to hold the soil, and it is a rapid grower and an excellent sprouter. Black locust is often attacked by the locust borer, which in many places prevents its use for growing fence post material, but the borers do not lessen its value for stopping the gullying of land.

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125 HEAD

BLAIRSTOWN, N. J. PURE-BRED HOLSTEINS

Sale will be held at Dr. Sharpe's farm at Blairstown, and it is strictly a breeder's herd.

INCLUDED IN THE HERD IS

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The Junior herd sire, who will also be sold, is LEWIS PRILLY ROUBLE HARTOG 2d and he is from a 30-lb. four-year-old daughter of a 31-lb. cow, and in his pedigree appears the only combination of three 30-lb. cows in which two are under full age.

There will also be offered in the sale a few choice selections from the herds of Bernhard Meyer, Findern, N. J., and Irving N. Roe, Branchville, N. J.

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BUILDING THE DAIRY HERD

By H. H. DEAN

EARLY every dairyman who owns, feeds and milks cows has as his ideal a pure-bred or registered herd. Lack of the necessary funds is what prevents many a cow owner from keeping pedigreed stock. But every cowman can do this: Own, or obtain the service of, a pure-bred dairy sire. This is the first step in laying the foundation for building a dairy herd. If there is no pure-bred dairy sire available and the ambitious owner feels he cannot afford to invest in such an animal by himself, he and two or three of his neighbors should co-operate and buy an animal among them. Very good young bulls may be purchased at from \$150 to \$300. This sum divided among, say, three men, means \$50 to \$100 each invested, and this will prove a profitable investment for those engaged in breeding dairy stock.

Each animal would save the three farms and if the herds are not large, and it is progressive dairy quality, some outside help may be taken in thus helping to pay expenses and interest on investment.

As soon as possible a pure-bred female or two should be added to the herd, thus making a part of the ideal, of a herd composed altogether of pure-bred stock, soon as conditions warrant the change in grades to pure-breds.

In the meantime all heifer calves from grade cows and pure-bred sire should be bred, so that the owner may have an opportunity to cull the poor ones as soon as they have been tested as breeders.

One may reasonably expect the first lot of grade cows to increase their dam's production 1000 to 2000 pounds milk yearly. If the dams are a rather inferior lot of milkers the heifers may be expected to

able their dams' production at the end of the second lactation period. The second grade will likely again increase the production by 1000 to 2000 pounds over the first grade. After this the increase will be less marked, but if the right kind of sires are used there should be a steady upward tendency in milk flow from the blood or strain which now predominates in his herd he might far better stick to his De Kols, Hengervelds or Pietertjes, than introduce outside blood which may blend, or it may not. The risk is considerable. However, if there be no strong stock available of present blood lines, a breeder might better risk outside blood than continue to use animals in which the blood has apparently deteriorated. These are vital questions which every man has to largely decide for himself. While general principles may be worked out and advice be tendered in accordance with the said general principles, the owner and breeder must decide for himself most of the questions as they present themselves.

We may mention here that the breeds should not be mixed. A man is acting most unwisely who has started, say, with pure-bred Jerseys, to cross these with Ayrshires or any other distinct breed. Breed and select the best animals belonging to the breed which has been chosen. Or, if a mistake has been made, sell the whole lot and start over again with the desired breed. However, a man cannot, as a rule, make more than one or two such changes in a lifetime with any hope of success. Life is too short, and building a dairy herd too long a process for a man to make more than one, or at most two, successful changes in breeding operations.

selves in the course of building up his herd. In conclusion we might suggest the great needs are for the best possible feeding and care at all times, but especially with the young animals. A heifer that becomes stunted in the early period of its existence never recovers from this setback. Some people say: "Yes, my heifers are rather small and not so thrifty as I would like to see them this winter, but they'll be all right as soon as they get out on grass." While we do not favor "hothouse" calves, nor pampering heifers by keeping them in heated stables, it is essential that they receive plenty of good feed to nourish them and maintain growth and vigor. They must also be protected from chilling winds, cold rains and damp snow. Plenty of fresh air, exercise and dry-

ness are essential for the successful rearing of young dairy cows.

If these heifers have been bred right, and then fed right, should they not come up to the standard set for the herd, these unprofitable cows should be disposed of for beef. We saw, some time ago, where a dairyman had put up a notice in his cow stable to the following effect:

"Every cow that enters here must give 10,000 pounds a year."

This may be too high a standard on some farms at first, but we should gradually increase our standard until all cows are large profit producers. In these times of high prices for feed and labor the dairyman can scarcely afford to keep any but the best. However, as one man has tersely remarked, there may be more profit in keeping a moderately good cow than having an empty stall in the stable.

By gradually improving the breeding and feeding operations of the dairy farm, we can then start the weeding. In this way a successful and profitable dairy herd may be built up in a few years.

Feed for Young Pigs

BEFORE weaning young pigs accustom them to a slop of sweet milk combined with grain. The Penna. State College Agricultural Experiment Station has obtained excellent results with a grain mixture of corn meal 4 parts, wheat middlings 3 parts, and tankage 1 part. The addition of skim milk increases the rate of gain. If skim milk is fed with this grain mixture the amount of corn meal may be increased to 6 parts. Other mixtures recommended are corn meal 3 parts and tankage 1 part, or skim milk 3 parts and corn meal 1 part. If possible pasture crops should be used for growing pigs. For quick growth 2 to 4 pounds of grain per 100 pounds live weight daily in addition to pasture crops are required.



The Jersey Bull—Prince Jonquil 85334
A son of Springfield Owl's Eva 19934 by the Imported Register of Merit bull Interested Prince 58221. An individual of excellent type, weighing close to 1600 pounds, yet fine in finish and wonderfully well proportioned. He has several daughters in the Register of Merit. Property of Meridale Farms, Delaware County, N. Y.

The Practical Farmer

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MAY 1, 1916

Where "Haste Makes Waste"

IN some neighborhoods the most desirable achievement among farmers is to be first to finish planting corn. This has led, in many cases, to poor crop yields. In the latitude of Philadelphia there is a considerable period during which corn may be planted and produce a crop. Some of the drawbacks to very early planting which may be mentioned are: First, poorly prepared soil, due to the haste to get the seed in the ground. Second, irregular weather conditions which may result in a poor stand. Third, often the entire acreage must be replanted on account of cold or excessive moisture, thus increasing the labor and expense of the crop. Generally, very early planting is accompanied by more risks than any increased yield will warrant. The facts are that careful experiments have shown that very early plantings rarely outyield the medium-season planting. Seed corn varies considerably in its capacity for withstanding cool, wet weather conditions that often beset early plantings. The writer has made tests along this line by planting corn at different dates, from the latter part of April to June. The results have shown that there is a much lower germination in the earlier plantings from the same stock of seed. When the ground has become thoroughly warm the corn will germinate much more uniformly and a better stand is secured. Early planting makes for slow development of the corn at the start, but increases the danger from weeds, since they will grow when the corn will not. Instead of planting very early, this time should be used in getting the land in good order and in freeing it of weeds which may have started. Corn grows very rapidly when conditions of soil are right and a difference of a week or ten days in time of planting will not injure the prospects of a crop.

Are You Missing Something

IN a recent issue of the Weekly Press Bulletin of the Pennsylvania Department of Agriculture, it is related that the Farm Advisers of the Department did the following work on a single farm:

"Tested soils, suggested place for truck crops on farm, examined alfalfa, showed where to plant millet, made up fertilizer formula for corn, located where to sow alfalfa in future and where to plant potatoes this spring, and sweet clover for improvement of land, located place for planting corn for corn contest."

If the Department is willing and able to do all of this work for one farmer, we cannot help but think that a good many of our Pennsylvania farmers must be missing a good thing. We hear from all sides frequent tales of crop failures and farm discouragements, but we think it is safe to say that not one per cent. of the farmers in trouble and in need of expert advice ever think to seek help from their State Department of Agriculture, and our belief in this respect is confirmed by the fact that one State Department's

Farm Advisers have time to do all this work for one farmer. Isn't it a pity that in a day when National and State Governments are doing so much in experimental work and practical investigation for farmers, so small a percentage of those who should reap the benefit are placing themselves in a position to get what is due them from these Departments which they help support? Why is it?

The Good and Bad in Picture

THE National Highways Association, whose headquarters are in Washington, D. C., have hung up prizes amounting to \$2,600, part of which some of our subscribers ought to capture. The object of the prize contest is to, by means of photographic reproductions, show how good good roads can be, and how bad bad roads can be. It is proposed to gather the photographic material for a complete picture of the good and bad road problem.

The first prize of \$500 will be paid for the most striking (good or bad) road photograph. Then follow five prizes of \$100 each, twenty of \$25 each, forty of \$15 each and one hundred of \$5 each.

The competition will be kept open for eight months, closing at noon, Tuesday, Nov. 7th. All photographs must be sent to "Good Roads Everywhere" Photograph Contest, National Highways Association, Washington, D. C., and be there not later than Nov. 7th next.

The exhibit is for the purpose of impressing upon Congress the necessity of national aid to help solve the good roads problem, and by this composite picture of roads, "good, bad and indifferent," impress upon Uncle Sam's lawmakers the urgent necessity for immediate and intelligent action.

The more poor country roads you can snap on the film of your Kodak, the better for the purposes of the National Highways Association. In the multitude of these horrible examples of a large proportion of the conditions which prevail on the common dirt roads of the country districts, some good may come to them from local, state and national sources.

And when you send the photographs in this contest, be sure to impress on the Association the necessity for putting state and national aid on these same dirt roads, not in patch-work sections, but by a well digested plan which shall materialize in effective work under sane conditions. It may be that the Association needs light on this phase of the problem.

The competitor may send in as many photographs as he or she wishes, and will be entitled to as many prizes as the photographs sent deserve.

Get in touch with the National Highways Association, Washington, D. C., now, and you will know more than we have space to tell, of what they want.

How Not to Do it

AFTER a considerable period of incubation a bill has been agreed upon by the President and leading members of the House of Representatives, embodying their idea of a non-partisan, or rather bi-partisan, tariff commission, and has been introduced in the House. It provides for a tariff commission of six members, not more than three of which are to be members of the same political party, to be appointed for two, four, six, eight, ten, and twelve years respectively, and as their terms expire their successors are to be appointed for twelve years each. The chairman and vice-chairman are to be selected biennially. Their salaries are to be \$10,000 annually.

The bill confers on the commission broad powers of investigation in this country and foreign countries. In this country it will have full power to summon witnesses, examine books and obtain other information necessary to a complete knowledge of the tariff problem, and how our tariff system should be administered to place conditions here upon the same plane as regards cost of manufacture as foreign-made goods coming here in competition with the manufactured products of the United States. Stringent precautions are taken for the protection of domestic trade secrets and processes. The committee to report from time to time its findings. And there it ends.

This is good as far as it goes, especially for those who shall fall into the ten thousand dollar positions. But it don't go far enough, except in the matter of salaries, and in a way leaves the whole matter of tariff revision up in the air.

It provides for the accumulation of facts necessary to a scientific and proper adjustment of our tariff laws, with a due appreciation of our revenue needs and the proper and needed protection of American labor, but it don't devise any method by which those

facts can be translated into law. The facts will be duly presented to Congress, and if we judge that august body by its past record, the facts will be duly pigeon-holed and our tariff will still remain the football of politics, and this tariff commission will be a snug harbor for sundry gentlemen to investigate and draw their salaries far into the indefinite future.

Why can't a tariff commission have the power to ascertain the facts necessary and formulate them in a scientific and rational bill, report it to Congress and give it the status of a bill reported to the House by a regular committee of the House and that body use it as the foundation upon which to build a rational tariff system?

Question is raised as to Congress' right to devolve its law-making power upon a commission, whose membership is foreign to that body; but with the above suggestion put in practice, the power to enact it into law would remain with Congress, with the advantage that the facts acquired by the tariff commission have been put into a concrete form for immediate action.

If we are to have a tariff commission, and we need one, let it be one that will stand for something that will be enacted into law.

Paying for the Jolts

THIS is the time of year when the owners of toll roads in our neighboring counties sit back and collect tolls for using their highways, which are full of holes and ruts and other nerve and body disturbing incidents which ruffle the tempers of those who are compelled to use them.

We opine if the Judges in whose jurisdiction these make-believe highways are situated, were compelled to travel over them morning and night in a springless wagon six days in the week, a way would be found to compel the road owners either to mend their roads, or mend their ways by throwing up the sponge and surrendering their charters.

Bulletin Helps for Farmers

"Eradicating Canada Thistle" is the subject of a bulletin just issued by the United States Department of Agriculture (Farmers' Bulletin No. 545), which will be of interest to quite a large proportion of our readers. Of course, the Department offers it free on application to the Division of Publications.

Believing that every farmer should keep a set of farm accounts and know whether or not his enterprises are being run at a profit, the New Jersey Agricultural Experiment Station at New Brunswick, N. J., has issued a folder containing an outline of a farm accounting system. Any farmer desiring one of these folders can be accommodated by applying to the station at the address above.

Such of our readers as grow cantaloupes for market (and there are many of these) will find help toward better prices in the U. S. Department of Agriculture Farmers' Bulletin No. 707, "The Commercial Grading, Packing and Shipping of Cantaloupes," recently issued. This is an excellent bulletin, full of valuable information and good illustrations.

Two bulletins, issued by the Storrs Agricultural Experiment Station (Storrs, Conn.), will be of interest to poultry raising farmers; these are "Bacillary White Diarrhea of Young Chicks" (Bulletin No. 85), and "Some Lice and Mites of the Hen" (Bulletin No. 86). Both are well written and illustrated.

Housekeepers who are troubled with insect pests such as cockroaches, fleas, bedbugs, clothes moths and carpet beetles, will find help in the U. S. Department of Agriculture Farmers' Bulletin No. 699, "Hydrocyanic Acid Gas Against Household Insects," the purpose of which is to show how this gas may be safely and effectively used as a means of destroying these pests. It is free for the asking.

"Wood grown in the farm wood lot is a farm crop;" this is the basis on which U. S. Department of Agriculture Farmers' Bulletin No. 711 discusses "The Care and Improvement of the Wood Lot." It is a pity that farm wood lots are growing smaller and fewer all the time in the East; farmers who appreciate this fact and want to make more of the wood lots they still have left, will do well to send a post card to the Department for this bulletin.

Four circulars recently issued by the New Jersey Agricultural Experiment Stations (New Brunswick, N. J.) are as follows: No. 50, "Common Diseases of Beans;" No. 51, "Diseases of Grains and Forage Crops;" No. 54, "Improving Acid Soils;" No. 55, "Asparagus." The Stations offer any of them to farmers free on receipt of a postal card request.

Ducks on the Farm

By MABEL G. FEINT

If I could keep but one kind of poultry that kind would be ducks—English Pencilled Runners. There are many reasons why I should make this choice, but perhaps the chief one is their great adaptability to conditions.

If housing and fencing facilities are poor ducks will do better than hens, as the former will thrive and lay in a house too cold for hens, providing it is dry and kept well bedded with straw. If time and care be devoted to them are limited the ducks will do better. If the highway, as is so often the case in these days of automobiles, is a dangerous place for poultry, ducks quickly learn to avoid it. They are not subject to lice or mites, and require no elaborate nest boxes. They lay early in the day, and after the morning feed they are off and away for the day, hustling for themselves. If you are detained away from home until after dark it does not matter with ducks, as they will eat any time by lantern light. This is a great convenience, as many will concede when they recall the annoyance of being obliged to be home early enough to feed the hens and chickens.

The only thing ducks cannot get along without is water for drinking. This they must have. But it may be given in dishes, as running water, creeks or ponds are not a necessity, though very desirable.

The ducklings may be hatched early or late, as convenient. Each plan has its advantages. The early hatched ones are well grown and able to look out for themselves by the time the rush season of work is over on the farm. This gives the caretaker greater freedom in late summer and fall, while the young ducks will begin laying early and will lay all winter. Late hatched ones, however, will mature about six weeks earlier than chicks of the same age—one does not have to bother with them during the busy days of early spring—and they will begin to lay at 5 or 6 months of age, even when hatched in late July or early August.

I always use hen mothers and give the ducklings their liberty from the start, unless it is very cold and wet. I find they develop as fast again as when cooped or yarded. They are by nature the most active of creatures, and this activity develops their muscles and keeps their digestion in perfect order, so that very rapid growth is made. I always give them good coops that can be closed at night to protect them from rats. If given their freedom the feeding question is never troublesome, as they eke out any ration you give them by liberal amounts of nature's foods, thus keeping a satisfactory balance of diet. Some foods are, of course, better than others. For instance, avoid a plain corn or corn meal diet. It is too fattening and has too little of the bone and muscle elements. Also avoid sticky or pasty foods, like boiled potatoes, and, of course, all heated or musty, moldy foods. Also avoid too hot sunshine for young ducklings.

Mashes of a mixture of ground grains are good, with the addition of a little sand and finely cut green stuff. The last two items need not be furnished if it seems too troublesome, if the ducks run loose, but they help to make thrifty, economical growth. I use a mixture of three parts wheat feed or best state bran, one part of white middlings, one part of corn meal and 5 to 10 per cent. of the whole bulk in a good grade of beef scraps, according to age of the ducklings and plentifulness of worms and insects. The first few days I give the

cracked corn, wheat and oats, until growth is nearly completed.

I prefer, however, never to give them any wet mash, but to feed it dry, in self-feeding hoppers, always kept well filled. This may seem ruinous to those accustomed to the time-honored methods. But it is a wonderful saving of time and labor, while producing the most excellent results.

The finest laying record of ducks I have ever known personally, was made in just this way—225 eggs each year, by one of our customers. The youngsters never knew a wet mash, and they made a remarkably early and complete development, beginning to lay very young. The eggs hatched unusually well, and every duckling was strong and vigorous, no weaklings. I believe this to be the ideal feeding method for ducks from every point of view.

As the ducks approach the time when one expects eggs, I decrease the amount of bran or wheat feed to two parts, increase the middlings to one and one-half parts and the corn meal to two parts, with at least 10 per cent. of bulk in beef scraps.

The hoppers attend to the morning, or day time, feedings, and I give them corn in winter and corn and wheat in summer for the night feed. Thus it is seen that only two trips a day to the duck house are necessary, one in the morning to gather the eggs, clean and fill the drinking dishes and see that the hoppers are full, and to open up the pens. Then a trip at night when the ducks come in from their range, to again fill the drinking dishes and give them their grain.

And the work of rearing the young is also greatly simplified by this method. After the first week or ten days they require surprisingly little time, and one can fairly see them grow. The surplus drakes may be sold at ten weeks of age, and they will go a long way toward raising the flock to the productive stage. I have no accurate data as to this, but my belief, from observation, is that eth-

er drakes or cockerels will pay for the rearing of the females to maturity.

I prefer ducks to hens, because they are not destructive to gardens or flowers. They are intelligent and may be easily trained not to do certain things. For instance, we kept a small flock in the city for a number of years. Twice each day they were turned loose to roam about our lot and two vacant ones adjoining for a half hour. They soon learned not to stray from this territory. By keeping a watchful eye over them while about my work, they soon learned where they must not go. Sometimes I would see them bunch together, apparently discussing the advisability of crossing over into the adjoining yard, then make for it surreptitiously. All

Thereafter they visited the field each day, gleaming the waste grain. By the time they had cleaned this field the buckwheat field, still farther away, was ready for them. Once driving them to this new feeding ground was all that was necessary this time, and it was really a sight to see them, so far away and so busy every day until snow actually came. They came home unfailingly at night, with protruding crops, and thus made very economical growth.

We have tried turkeys, but they cannot be controlled. They respect no one's rights, and they will not come home once a week, unless driven.

These ducks are indeed natural foragers. I have picked them up when animal life was plentiful, and have seen the worms actually pour from their throats, being literally full to the bill. I have opened the crops when dressing ducks, or the elastic tube above the gizzard, which answers the purpose of a crop, and found it filled to its capacity with weed seeds and bits of plantain leaves. They are death to white grubs and destructive worms, making them of great value to the farmer, as they will follow a plow all day, busily engaged, stuffing themselves with tidbits of this sort.

The past winter they spent two to four days of every week on their pond, only staying in when very stormy or when the pond was frozen over. The photograph shows their enjoyment of an early morning bath, when ice and snow were on every side. This kept them clean and in fine condition.

As layers we find that they certainly excel the ordinary farm flock of hens, equalling the performance of many trap-nested strains of the latter. It has long been a study to me how one could trap-nest ducks, or devise some system of definitely distinguishing the most persistent layers. It has never been done so far, except in a general way, and a rich reward awaits the one who can breed them up by such definite selection of layers. General conformation has, so far, been the chief guide in selecting and developing a laying type, and this is why the English Pencilled Runners excel the American Fawns as layers. The standard adopted by the breeders of the former class conforms more closely to the prolific laying type. The newer White Runners also emphasize these characteristics and are proving themselves worthy competitors of the original or Pencilled Runners.

New York.

Spreading Lime When the Wind Blows

By GEORGE H. DACY

It's an ill wind that blows when the farmer wants to apply his dressing of lime over the soil and is temporarily tied up on the work because of the contrary breezes. Now the wind is liable to blow and to keep on blowing. The farmer wishes to apply the lime to the corn land in order that the material may be well harrowed in before the seed is planted, or else he wants to spread it on corn stubble land or fallowed land which respectively are to be seeded to wheat or grass.

The writer was confronted with this problem. For sixteen days the wind blew every day with sufficient velocity to prevent the uniform application of lime either in a spreader or by hand. Corn planting time was approaching and he had 85 acres of land to lime. He was able to apply the lime in the spreader successfully in sheltered portions of the fields, but in the open the lime would blow to the adjoining farms. Furthermore, it was a very disagreeable

job to attempt to drive the spreader under these conditions, on account of the caustic lime dust blowing into one's eyes. Some form of wind shield for the lime spreader appeared to be the only practical solution of the difficulty. With complete success the writer used a wind guard which he fastened at the back of the spreader, consisting of fertilizer sacks tied together and weighted down with a chestnut pole, the shield being fastened to the lime box and extending to the ground. The windbreak was made just a little shorter than the distance between the two wheels, so that there was no danger of the fertilizer bags getting caught on snags or being tangled when the machine was turned around.

The spreader was then driven backward and forward across the field directly with and against the wind, and the lime was evenly applied over the ground. Of course, there was some blowing of

(Concluded on page 192)

two-thirds of emulsion in first boiler and the rest in the last boiler. Use according to size of washing, the amount of soap you would usually use, and paraffine accordingly.

I use the hot suds after the first sudsing out, for the colored clothes. Soak a few minutes and they will wash easily. If busy housewives would try this I am sure they would find a saving of time, strength and clothes.

Mrs. F. E. K., Black Hall, Conn.—Until I learned to use the following washing fluid it was a doubtful economy to try to do my own washing. Now I do it all without the accompaniment of aching muscles. To make the washing fluid use 1 can potash, 1 ounce salts of tartar, 1 ounce powdered ammonia, 1 ounce borax; dissolve all together in an earthen dish in a pint of warm water; pour over this 4 quarts of boiling water and stir for five or ten minutes. Use half a cupful in a boiler of clothes, in cold water; let come to a boil, drain and rinse in clear water, blue and dry. Only the worst soiled places will need rubbing. I use a vacuum washer. Keep fluid in a corked jug.

(Many good suggestions were offered in the contributions to this Exchange, but on the difference in value of suggestions alone it was impossible to select a first prize; accordingly the Editor was obliged to take into consideration the general excellence of the manuscripts submitted in making the award. This is always done in cases of ties.—Editor.)

Selling Incubator Eggs

The U. S. Department of Agriculture cautions incubator owners against the disastrous practice of shipping to market, along with perfectly good eggs, those eggs which were removed from the incubator on the first test. Very little of this is now done in the East, and the practice affects no one so much as it does the shipper; the wholesale buyer very quickly determines the presence of these eggs, no matter how few there may be in a case, and sets a price much lower than the balance of the crate should bring.

The Editor's Book Review

Below are comments on some of the more recent books which have come to the Editor's desk from their publishers. The modern farmer in a reading farmer of course, and like other business men we believe our farmers are building up libraries by the occasional purchase of books on farm subjects in which they are interested; in no other way can a farmer improve so rapidly or substantially in his chosen calling as by reading the best in farm papers and books and preserving for reference the written accounts of the experiences of others.

For our readers convenience, we will be pleased to furnish at the publishers prices any of the books reviewed below, or any other obtainable books on farming. Further, we will be glad to give special rates to our readers on any given farm subject on receipt of request with stamp for reply.—The Editor.

Two new volumes in Lippincott's well known Farm Manual Series (J. B. Lippincott Company, Philadelphia) have recently been received by the Editor. These two books, which seem to be fully up to the high standard set by this series heretofore, are:

PRODUCTIVE FARM CROPS, by E. G. Montgomery, Professor of Farm Crops at Cornell University. (\$1.75 net.)

While this book is primarily intended for the use of students in agricultural short courses, secondary schools, and in the lower grades of the agricultural colleges, it is also of such a practical nature as to be of value as a handy volume for farmers desiring a reference book covering all of the cultivated crops; in it the author has endeavored, with apparent success, to develop the fundamental principles of crop production as demonstrated by practical experience. It is copiously illustrated, thoroughly indexed and is well worth the reading and frequent reference of any farmer.

PRODUCTIVE BEE-KEEPING, by Frank C. Pelet, State Apiarist of Iowa. (\$1.50 net.)

This is a very readable book, beautifully illustrated and sets forth the business of bee-keeping as a fascinating pursuit which may be rendered very profitable. From making a start with bees, the chapters lead up through the arrangement of the apiary, the care, feeding and increase of bees, production of honey, devices and implements used in bee-keeping, and ends up with chapters

on marketing the honey crop and laws that concern the bee-keeper. Any farmer who keeps bees, or who has ever thought of keeping bees can profit by reading this little volume.

Four new volumes in the Rural Text-Book Series (The Macmillan Company, New York), have recently reached the Editor's desk. While the volumes of this series, edited by Mr. H. L. Bailey, are primarily intended for class room work, they are also excellent reference books and form splendid additions to the library of farmers interested in the subjects treated on. The four new volumes in hand are:

THE PRINCIPLES OF PLANT CULTURE, by the late E. S. Goff. This is the eighth volume of this series, revised by J. G. Moore and L. R. Jones of the University of Wisconsin.

This well known volume, which treats of the foundation elements of good farming and gardening, will be welcomed in the revised form.

THE BREEDS OF LIVE STOCK, by Carl W. Gay, Professor of Animal Industry, University of Pennsylvania.

A fine manual, descriptive of the various breeds of horses, cattle, sheep and goats and swine. An authoritative reference book for any farmer interested in live stock.

THE SMALL GRAINS, by Mark Alfred Carleton, of the United States Department of Agriculture.

A valuable book on the methods of cultivation and handling of such grains as wheat, oats, rye, barley and the minor cereals.

PRINCIPLES OF FLORICULTURE, by Edward A. White, Professor of Floriculture in the New York State College of Agriculture at Cornell University. (\$1.75.)

In this book are considered the principles which underlie the successful culture of ornamental plants, the business principles in marketing flowers and the factors which underlie successful culture of standard florists' crops.

FARM SHOP WORK, by George M. Brace and D. P. Mayne (American Book Company, New York). (\$1.00.)

Here is a book which many of our farm fathers would do well to put in the hands of their sons, and having done this, to read the book themselves and profit thereby. In it are set forth a series of projects in wood-working, blacksmithing, cement and concrete work and harness mending, which provide not only valuable training in the practical arts, but will result in the making of many things that are of great use on the farm. The little volume contains 291 pages of interesting and instructive text and diagrams.

HAPPY HOLLOW FARM, by Wm. R. Lighton. (Geo. H. Doran Co., New York. \$1.25 net.)

This is just a story, but a mighty interesting story to farmers; it is the tale of how a city family established itself on a run-down farm in the Ozark Mountains of Arkansas, and with much labor and at a moderate expense worked out of that farm freedom, happiness, health and finally prosperity. Into the story is woven much of good method in farming, perseverance and determination, and there is much in this little tale which will not only interest, but help many farmers.

MARKETING AND FARM CREDITS: a collection of papers read at the third annual session of The National Conference on Marketing and Farm Credits in joint program with The National Council of Farmers' Co-operative Associations; published by the Conference (Chas. W. Holman, Secretary, Madison, Wis.); 544 pages, paper. (\$1.00, postage 15 cents extra.)

This book, containing a most interesting collection of papers, is printed as the result of public contributions and the proceeds of its sale are to go to a trust fund for the carrying on of the educational work of the Conference. It is full of interesting facts about the two great business problems that farmers must solve for themselves and that every person on a farm, or interested in farming, should know.

CONCRETE ON THE FARM AND IN THE SHOP, by H. Collin Campbell (The Norman V. Henry Publishing Co., New York); 128 pages, flexible cloth. (75 cents.)

This is an interesting little volume on a subject, concerning which farmers are seeking, and should have, more information; it is very simply written, and is not only very instructive, but highly interesting as well. Fifty-one illustrations help to make clear the instructions given for building from concrete a host of useful things on the farm for which this material is well adapted.

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7710.—Ladies' shirtwaist. Cut in sizes 34 to 42 inches bust measure. This waist slips on over the head.
7696.—Girls' dress. Cut in sizes 6, 8, 10 and 12 years. Linen, gingham or serge can be used for this dress. The skirt has four gores.
7731.—Ladies' dressing sacque and cap. Cut in sizes 34 to 42 inches bust measure. This sacque is cut in one piece.
7717.—Boys' suit. Cut in sizes 2 and 4 years. The suit has a plain blouse and the trousers may be separate or attached to the waist.
7717.—Girls' dress. Cut in sizes 6 to 12 years. The dress has a two-piece skirt and long or short sleeves.
7741.—Ladies' dress. Cut in sizes 36 to 44 inches bust measure. The dress has a four-gored skirt and long or short sleeves.
7733.—Ladies' skirt. Cut in sizes 24 to 32 inches waist measure. The skirt is cut in three gores.
7723.—Ladies' working set. Cut in sizes 36, 40 and 44 inches bust measure. This set consists of a blouse, cap and three-gored skirt.
7745.—Ladies' skirt. Cut in sizes 24 to 32 inches waist measure. The skirt has three gores and a slightly raised waist line.
7747.—Ladies' apron. Cut in sizes 36, 40 and 44 inches bust measure. The apron closes at the left side of the front and covers the entire dress.

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Your home-made soap will not hurt the hands or clothes when made according to directions with Babbitt's Pure Lye. It is good for everything that any high-grade laundry soap will do. Be sure to use Babbitt's Pure Lye to get best results. The new can is equally handy as a sifter when using a little lye around the sink, in cleaning milk cans, etc., or when it is desired to pour out the entire contents as in making soap.

B. T. BABBITT
New York City

The Practical Farmer

Live Stock and Dairy Section

A "Gold Medal" Milk Plant

In the rolling, heavy clay lands of Chester county, Pennsylvania, is a large farm upon which the eyes of the whole dairy world have been focused during the last few months. For the official bacteria count at the Panama-Pacific Exposition established for "Glen Gable" a new world's record in the production of pure milk.

In the spring of 1906, Lowell Gable returned from the agricultural course at Cornell University with his "sheepskin" and an eager desire to try his hand at practical farming. Fortunately for Lowell, his father, William F. Gable, a prominent business man of Altoona, was disposed to gratify his wish. So young Gable soon found himself manager of a 1200-acre tract of somewhat broken land. The present farm includes what were formerly seven distinct farms. About 750 acres are now under cultivation. "Glen Gable" is not a "gentleman's estate," but a practical money-making farm managed for profit by a keen business farmer.

The main crops are corn, oats, wheat and clover, forming the rotation so common in dairy regions. About 30 acres of alfalfa are grown for summer feeding to the cows. After considerable experimenting Mr. Gable has found alfalfa the most desirable soiling crop. The 100 acres of corn are ample to fill the seven big silos, besides furnishing plenty of grain for about 100 Chester White hogs.

Three of the silos, each 14x32 feet, are located at the main buildings. Two are used for winter and one for summer feeding. Mr. Gable regards silage as so essential to the dairy ration that it is used practically the year round. The writer visited the silos on December 30th after several weeks of severe winter weather. There was not a particle of frozen silage anywhere. Plunging the hand into the silage within a few inches of the walls, warm, "steaming" silage was obtained, sweet and wholesome. It could not be otherwise, for Mr. Gable had taken care to have a good man pack the silage at filling time, and the hollow tile silos had perfectly preserved the entire succulent mass of feed within their air-tight walls. The silos settle nearly 6 feet after filling, but the hip or "Michigan" roofs allow them to be so well filled that the settled silage comes almost to the top of the walls.

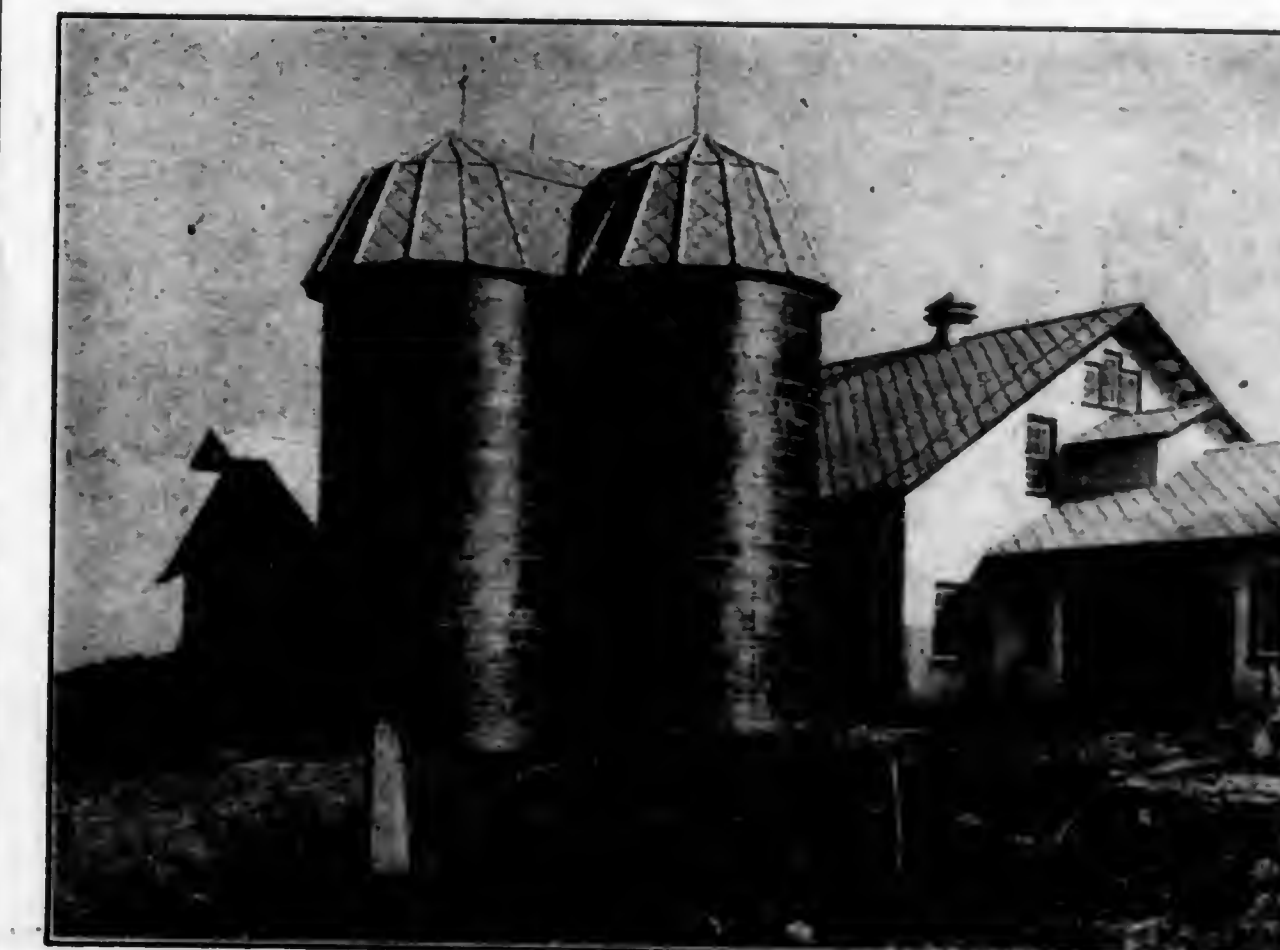
The four remaining silos (also of hollow tile) have been erected at other points upon the farm for convenient distribution of feed.

After months of careful planning, active work was begun in July, 1914, on the construction of the present superb, modern, sanitary buildings. Hollow building tile, 8 and 10-inch sizes, were chosen for the walls. These were covered with cement stucco, giving a finish of simple beauty which adds much to the appearance of the buildings. It was figured that such barns require no painting, thus eliminating one of the chief expenses in the maintenance of ordinary farm buildings, while the dead-air spaces in the tiles make the walls splendid non-conductors of heat; for this reason the barns are warm in winter and cool in

summer. The walls are plastered on the inside with cement, making a surface that is smooth, sanitary and easily whitewashed.

A modern ventilating system furnishes the cows and horses with an abundance of pure, fresh air without creating drafts through the buildings. It is practically impossible to produce pure milk in a vitiated atmosphere.

The main barn accommodates four rows of cattle, 56 head in all. A dry clay floor is provided under the bodies of the cows, thus avoiding objectionable contact with the cement. The trenches drain into a cistern, which conserves every bit of the liquid manure to be applied to the land. Since this barn is



A Group of Buildings at "Glen Gable"

built to conform to the requirements for producing certified milk, no provision has been made for storing hay or other feed in this model dairy barn. The other buildings are, however, provided with capacious hay lofts.

The milk room, of the same construction, is finished with cement. This is the very heart of the dairy, for here are to be found the separator, pasteurizer, and aerator—all the machinery necessary to prepare the milk for market. A gasoline engine operates a small dynamo which is connected with a 56-cell storage battery able to deliver a current of 110 volts. The buildings are lighted throughout with electricity. A shower bath for the men is another of the details that enabled "Glen Gable" to produce "the world's purest milk."

In one of the nearby buildings are comfortable box stalls, 10x12 feet, for the use of the cows with young calves, or when undergoing test for the advanced registry. Automatic devices enable "Bossy" to help herself to a drink at pleasure.

That Mr. Gable's plant is built and kept in highly sanitary form is proved by the remarkable showing made at the Panama-Pacific Exposition. In competition with 2500 samples from all parts of the world, milk from "Glen Gable" was awarded the Gold Medal for "market milk." No attempt was made to enter

Preparedness in the Dairy

By ELLSWORTH BROWN

"Preparedness" is the word that we see most often in print nowadays, and this word is causing a good deal of comment and worry among us farmers—not only in the sense in which it is used in the papers, but also from the standpoint of our daily business. Let us turn our attention to preparing to feed the dairy cows through the coming fall and winter.

Fall pasture conditions are very apt to be disappointing; therefore, to rely wholly on pastures for fall sustenance of the gentle kine may be not only cruel but unprofitable. The thoughtful dairyman will make preparation in the spring to supplement the fall pastures. The common practice among farmers is to

stalks grow large. If there should be any fodder left after the fall feeding is over it will make excellent winter feed. Bovines seldom refuse to eat the butts of sweet corn. There is another forage crop that is gaining in favor rapidly and I have found it equal to the reputation it sustains. Concerning its good qualities, "the half was never told." I refer to soy beans. I find the best way to raise them is to plant them thickly in rows and cultivate them.

Those who make a practice of providing ensilage for fall feeding find it a cheap way of keeping up the flow of milk. The winter silo is an almost indispensable adjunct to the dairy farm. As far as is known, soy beans and corn make one of the best combinations for the silo. It is possible to put soys and corn into the silo in a proportion that will make a balanced ration, having the protein and carbohydrates in the proper ratio. The corn may be planted about 10 or 12 inches apart in the row and the beans every 3 inches. A separate piece of ground should be planted to soys only and when filling the silo one team should spend the time hauling beans exclusively. About every fifth load should be beans. In managing this way it has been found that the silage will consist of nearly a balanced ration.

The soy beans should be inoculated. I find the commercial bacteria satisfactory and the inoculating material sent out by the Federal Government is also reliable. Medium Green and the Wilson soys are among the best.

We should plan to have enough and a little to spare for next winter's feeding. There is nothing more disheartening than to become aware that we will be short of rough feed, and none to be purchased except at a large price. Too often we find farmers who realize in February or March that they will run out of rough feed and say they cannot afford to buy hay at the ruling prices. And often it is the cows who are made to suffer the most on account of lack of feed. It is the cows that are most in need of plenty of nutritious feeds, as they are expected to give milk in addition to their bodily maintenance. How often we have seen horses come through the winter in good shape and the same man's cows grow so weak that they can hardly walk, just for lack of a sufficient amount of nourishment.

Let us prepare to give our bovines a "square deal" and provide a plenty for the coming winter's feeding. A little extra hard work to that end in the spring will save a lot of worry later on. Preparation is the key to success. Pennsylvania.

the class of "certified milk." Nevertheless, the "Glen Gable" sample was awarded Sweepstakes over all classes, including both "pasteurized" and "certified" milk. The official bacterial count of 100 per cubic centimeter establishes a new world's record for pure milk.

The barns at "Glen Gable" are the home of a splendid herd of registered Guernseys and trotting horses which are

bred along commercial lines. The Guernseys are rich in the blood of Ledyard Bay and Mayrose. A number of cows are already in the advanced registry. Glen Gable Jane has an authenticated record of 530 pounds of butter, while Hazel's Clementine produced 600 pounds in a single year. Nearly all the cows have been bred upon the farm. A ready market is found for the bull calves.



Tom—You're not turning as fast as Dad does, Mary.
Mary—No Tom, but we'll get all the cream any way with this lovely new machine. Dad says

"It Skims Clean at Any Speed"

That's what this marvelous new invention actually does.

A fixed-feed separator may skim clean if in perfect order and turned at just the **right speed**. But every member of the family turns the crank at a **different rate**; no one can maintain an even speed **all the time**—it isn't human nature. Every old type separator has an **unchanging inflow** of milk. That's why it loses cream when not turned at exactly the right speed.

THE NEW SHARPLES SUCTION-FEED

Separator gets all the cream because it automatically regulates the inflow exactly in proportion to the separating force—always just right for perfect skimming.

The Suction-feed Separator delivers smooth cream of **even thickness** that churns out more butter of choicest quality. If you sell cream you can **guarantee uniform density**.

You can increase the capacity of the Suction-feed by simply turning faster, and get through quicker if in a hurry. The new Sharples is the only Separator that can be hastened. You can easily pour milk from a forty-quart can into the low supply can. It's the largest found on any separator—and it's only knee-high.

The women folks prefer the Sharples because the simple tubular bowl is so easily cleaned. Has only three pieces—no disks to wash or to get mixed up. The tubular shape gives double skimming force.

The new Sharples is ruggedly built for hard service. It is neat, compact, runs easily and oils itself.

This wonderful machine will earn you a new dairy profit—without added expense. Our new free book, **"Velvet" for Dairymen**, fully describes the Suction-feed. Your copy is ready. Send for it today. Address Dept. 40.

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Some 22 men are employed the year round by Mr. Gable. Most of them are married men who live in comfortable cottages on the farm.

The handsome, well-appointed office is worthy of a business farmer. A surveyor's map is kept at hand for instant reference. This makes it possible to intelligently supervise work at any part of the farm. An adding machine greatly facilitates the handling of accounts.

Lowell Gable has applied the same sound principles to the business of farming that his father employs in his large mercantile enterprise. He has succeeded in combining seven ordinary farms into a single unit and is operating them at a profit. There is many a lesson in farm management at "Glen Gable" of inestimable value to the practical farmer.

Lameness in Horses

J. J. REED, V. S.

(Continued from April 15th Issue.)

The examiner having become satisfied which leg the horse is lame in, must now endeavor to find the seat of its cause. In all cases where doubt exists as to the seat of lameness it is good practice to remove the shoe and examine the foot carefully; and if he fails to find anything wrong there he must endeavor to find out where it is, by careful manual examination, assisted by the peculiarity of action, which will be discussed in future articles as the various lamenesses are observed.

Lameness is not itself a disease, but a symptom of disease. It is an expression of pain or inability, the result of disease, accident or malformation in the limb or limbs in which it is manifested. It may, however, arise from disease from the limbs, as from injury to or disease of the spinal cord, disease of the brain, nerves or arteries, and occasionally from disease of the liver. It may exist for a time independent of disease—a mere expression of pain without actual disease, as from a stone caught in the foot, an ill fitting shoe, a shoe the nails of which are too tightly clinched, etc., but if these causes of pain and lameness continue for any considerable length of time, disease is sure to follow. Disease without lameness much oftener exists in a limb than lameness without disease. Thus a horse may have a wound, ulcer, bony deposit, tumor, or other diseased condition in a limb, and at the same time go sound. Some authorities claim that any impediment in action is lameness, while others claim that lameness cannot exist without pain, and that disease which interferes with action but does not cause pain, causes stiffness, but not lameness. For example, the fracture of a bone, or inflammatory action in a joint, may result in ankylosis (the union of two or more bones into one, by bony deposit) of two or more bones of joint, which, when inflammatory action has ceased, causes no pain, but interferes more or less with action, causing the horse to go stiff in the affected limb. Again, complete dislocation of the patella (stifle bone) causes the animal practically no pain, but produces complete inability to use the limb.

Pain may be said to be the general cause of lameness. The patient feels the pain, either when he moves the limb or when he bears weight or presses upon it. During progression the patient endeavors to avoid throwing weight upon the lame leg, by treading lightly or stepping short, and by removing weight as far as possible from the seat of pain. Not only by using the lame limb in a manner calculated for this purpose, but by treading on the heels when pain is in the toe, and vice versa, but also

throwing as little weight as possible on the lame limb.

Weakness of the limbs, either congenital or acquired, may cause lameness, and inability to perform the functions of progression properly. For example, want of development of muscular fibre in the extensor muscles of the forearm, sometimes seen in foals, causes the animal to stand and walk upon the front part of the fetlock joint, the heel of the foot and the fetlock pad being brought into close contact, due to the flexor muscles being well developed and having little antagonistic power opposed to them; the fetlock joint is flexed and the power of progression greatly interfered with. Again, a horse may be lame by excess of tonic in the muscles of a limb, accompanied by great pain, as in muscular cramp, which renders him very lame for a time.

For the detection of the lame limb, the following general rules should be observed: When the foot of the lame limb touches the ground during progression, the patient suddenly elevates that side of the body and drops the other. If the lameness be in the forelimb, the head, as well as the fore part of the body, is raised from the lame, and dropped upon the sound foot. This is called "nodding," hence the animal nods when the foot of the sound limb touches the ground. If the lameness be in a hind limb, the quarter of the lame side will be elevated, and that of the sound side thrown forward and downward with a jerking motion, the head being held moderately steady, unless the pain be excessive, in which case it may be jerked in agony.

The symptoms indicating the seat of lameness are of two kinds, (1) Those manifested during action; and (2) those discoverable by an examination when the horse is at rest. In many cases the latter alone are sufficient to indicate the seat and nature of the disease; but in such cases the lameness must be well marked; manifested by pointing, standing with the lame leg flexed, or elevated from the ground, with the healthy feet placed as much as possible under the body, in order to bear the weight. In addition to these symptoms there is often noticed well marked swelling, heat and tenderness to pressure of the injured part.

In most cases, however, it is necessary to cause the patient to perform some movement, and experience teaches us that a slow, easy trot on hard ground, with a free head, is the best pace. A horse may walk lame, but in most cases the peculiar characteristics of the lameness are best shown at the gait mentioned. There are cases of lameness, however, as in slight splint lameness, when it is necessary to urge the patient to a sharp trot before any deviation from the normal gait can be noticed.

(To be continued.)

A Jersey for "Preparedness"

"Marjorie's Battleship Fund," conducted by the New York Tribune, has received an unusual gift in the form of a pure-blooded Jersey bull. His name is Dreadnaught o' Peaceful Nook 139884, and the donor of this gift, who is no doubt in hearty accord with both military and economic preparedness, the latter meaning better dairy cows among other things, is Arthur Louis Benedict, of New Canaan, Conn. The following lines were sent along with Dreadnaught:

"From the quiet realm of Peaceful Nook, I send you 'Dreadnaught,' young and true. He has a bright and snappy look. I think you'll find 'twixt me and you. No peevish views of duty's call. Observe the path whereon he treads. And hater o'er it like a pall. So, when as chief a herd he heads. And rules supreme in strength and might. He'll never be found 'too proud to fight.'"

Feeding and the Making of Balanced Rations

By H. H. DEAN, Author of "Canadian Dairying"

(Articles in this series appeared in our issues of March 15th, April 1st and 15th.)

IV.—Home Grown or Purchased Feeds

Before taking up the question of balanced rations in detail, there are two other questions which should be dealt with, namely, whether to use home-grown or purchased feeds; and whether or not cost considerations should enter into the problem.

In this article we shall deal briefly with the first of these, and in our next will discuss cost.

We are to deal with a rather delicate question and one about which there is considerable difference of opinion. For years a number of firms manufacturing and dealing in feeds have kept their particular product or products prominently before the cow-feeding public. It is, no doubt, very convenient for the farmer or feeder to be able to buy ready mixed feeds of a known composition, or at least approximately so. The farmer who knows the composition of feeds grown on his own farm, and also the composition of feeds which may be available for purchase can, no doubt, mix at home more economically than he can buy ready mixed feeds. However, there are, and I presume always will be, those who do not wish to go to the trouble of studying the composition of feeds, nor to take the trouble of, or chances on, home mixing. For such the fact that there are a number of reliable firms who sell ready mixed feeds, guaranteed of a standard composition, is a great aid in economical feeding. Without such help many feeders would be unable to get good results.

Then, also, these feeds are an advantage to the man who does not grow sufficient on his own farm to supply all his needs for concentrates. For this class of farmer the commercial feed is a great help. The state inspection of feeds makes it fairly certain that the buyer gets what he is paying for. Admitting all the foregoing, and much more that might be added, we are strongly of the opinion that the ordinary dairy farmer should aim to grow all the feed required by his stock on his own farm, wherever this is possible. The advantages of home growing are:

1. The feed is always on hand when wanted. Delays on account of freight blockades, strikes, lax filling of orders, etc., are unknown to the man who grows his own feed and always keeps a supply on hand ahead of requirements. Cows must be fed two or three times a day and appetites do not wait for delayed feed orders. Or, if they do, the result is shown in the milk pail or on the cream check.
2. There is less danger of spreading noxious weeds over the farm, as some purchased feeds are full of foul seeds, which pass through the animal undigested and consequently reach the land in a condition of vitality. The weed problem is difficult enough on most farms at present, without adding to it.
3. Commission and freight charges are saved. "A dollar saved is a dollar earned," says a well-known proverb. Save all you can, is a very good motto at any time, on the farm or elsewhere. The present generation is characterized by wastefulness. "Waste not, want not," is another good proverb.
4. The home market is the best kind of a market for all kinds of farm

produce, if prices and other conditions are equal to the outside or foreign market. To sell goods at home, or at our own door, saves risk in transportation and in collecting, and tends to promote happiness and prosperity.

However, there are times when it is advisable, and good business, to sell home-grown feeds and buy those offered on outside markets. These conditions are, briefly, when home-grown feeds are relatively high in price and purchased feeds comparatively cheap. To take advantage of this a farmer needs to study the markets closely, know the composition and relative feeding values of feeds to be sold and bought, and he needs to know, so far as possible, the requirements of his animals. With this knowledge at hand the seller becomes an intelligent buyer and the buyer a shrewd seller.

(To be continued.)

Suggestions for Hog Cholera Treatment

With the approach of the open spring weather farmers should be on guard against the appearance and spread of hog cholera in their herds. Suggestions for the prevention and treatment of hog cholera as outlined by the Pennsylvania State College School of Agriculture and Experiment Station include the following: 1. Feed clean food and properly balanced rations. 2. Keep troughs clean and free from dirt and filth, and disinfect pens with a dip solution once a week. 3. Put all new hogs in quarantine for two weeks before putting them in with the clean herd; never peddle a boar around for service; never breed to a peddled boar, nor allow a boar to serve strange sows. 4. Watch out for birds and dogs as carriers of infection; never allow a neighbor to enter the hog pen if there is a strange disease among his hogs, and keep away from his pen also. 5. Keep a mixture of charcoal, salt and sulphur in a clean, dry place, where it will be accessible to hogs all the time. 6. In an outbreak notify a competent veterinarian or the Live Stock Sanitary Board, Harrisburg. 7. In case of hog cholera remove healthy hogs from infected pens and vaccinate them. 8. Burn dead hogs and refuse, clean up pens and thoroughly disinfect premises.

Queries Answered

Docking Mature Sheep.—J. P. T. Tennessee, writes: "Please tell me if I may with safety dock some year-old sheep."

It is quite safe to dock mature sheep if the proper instruments are used. The only danger connected with docking mature sheep is excessive bleeding on account of the well developed blood vessels. A very hot iron is the safest instrument to use as the heat of the iron will seal the flesh where the cut is made, and check the flow of blood. In the case of mature rams it is especially important that the iron should be red-hot. The cut should be made about an inch from the body. If excessive bleeding should follow the operation the flow of blood may be checked by the use of tar or some dry powder, but there will be little danger if the iron is properly heated.

W. H. T.

Ophthalmia.—H. M. Indiana, writes: "I have a horse which has a sick eye. I think it is a cold. The eye is dull and has a bluish skin over it. At the bottom of the eye there is an oblong white spot. This spot runs across, though not the full length of eye. The arteries in this spot are inflamed. Can you give me any advice?"

The symptoms indicate that in some way the eye received a direct injury at the seat of the "oblong white spot" mentioned. Get a lotion made of 5 grains of sulphate of zinc, 20 drops of the fluid extract of belladonna and 2 ounces distilled water. Keep the horse in a partially darkened stable, or if forced to work him, shade the eye from wind and sunlight by arranging a white cloth over it, kept from contact by the blind on the bridge. Bathe well with hot water three times daily, and after bath-

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The creamerymen's choice can't be far wrong. The world's greatest dairymen and mechanical experts who act as judges at the great expositions can be depended upon to recognize real merit, and the fact that the De Laval is the choice of the majority of all cream separator buyers must mean a good deal to you. In your purchase of a cream separator can you afford to ignore these considerations?

Let the De Laval start saving cream for you right now. See the nearest De Laval agent at once, or if you do not know him write us direct for any desired information.

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amount of roughage per day than those not receiving molasses. The results of the experiment in this lot are in keeping with those of previous years, indicating a place for molasses as an appetizer for cattle, especially when a large amount of roughage is being fed.

Five other lots of handy weight cattle were fed to determine the value of different rations in fattening cattle. Some very striking results were obtained in some of these lots, especially where corn silage formed a major part of the entire roughage used.

Lot I received a ration made up of feeds commonly fed in many sections of Pennsylvania where no silage is used. This lot received a grain mixture of 3 parts corn meal and 1 part bran, mixed hay and corn stover. This combination was fed throughout the entire period. The cost of making a hundred pounds of gain in this lot during the first 56 days was \$9.73 as compared to \$5.60 in

ed with 2½ pounds of cotton seed meal per 1000 pounds live weight, except that Lot III received alfalfa hay in addition to the corn silage and received cotton seed meal at no time during the experiment. Grain was added to all lots during the last 84 days of the experiment, with the exception of Lot VI, which received corn silage, all they would consume, and 3½ pounds of cotton seed meal per head, daily. From the table it will be noted that this lot made the highest daily gain, required the smallest margin to pay for the cost of feed and were sold, in the lot, within 5 cents of the best lot, rated at \$9.30 per cwt. Lot III, which received the alfalfa hay as a source of protein, was the poorest lot of cattle, lacking the condition and finish of some of the other lots.

The results of these experiments bring out the advantage and importance of corn silage as a feed for beef production. The cattle were valued by a com-

pounds of cotton seed meal when fed as a source of protein.

5. Bran was not economical as a source of protein in a ration for fattening cattle.

6. Corn silage fed to the limit of their

appetite, supplemented with 2½ pounds of cotton seed meal per head, daily, during the first three months, and 3½ pounds per head, daily, during the last two months proved to be the most economical and satisfactory ration.

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By all means see the 1916 International, Osborne and Keystone side delivery rakes and hay loaders before your haying season starts.

All Left-Hand Side Delivery Rakes

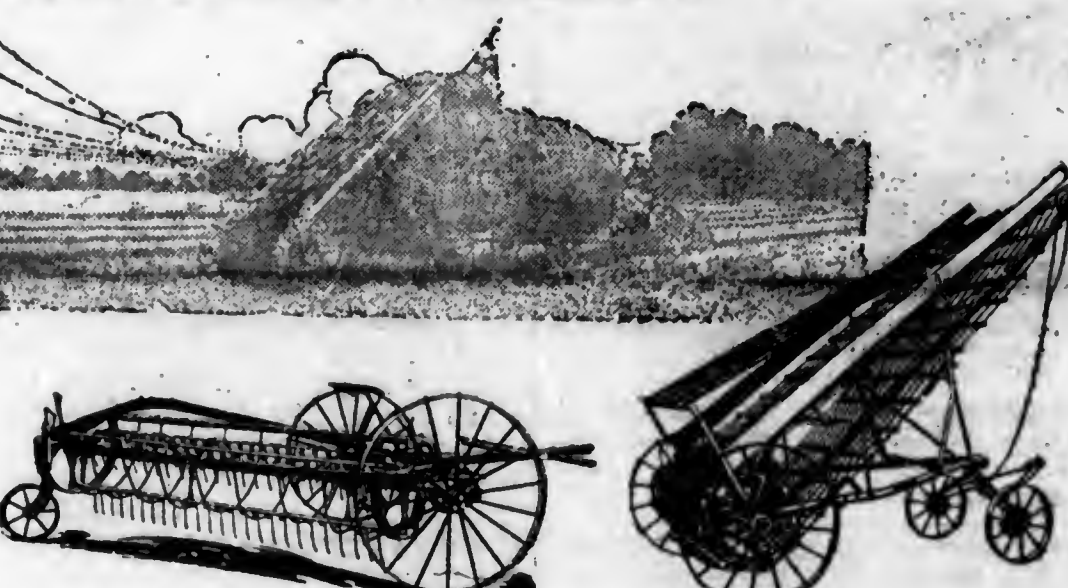
These new side delivery rakes are all left-hand rakes. Taking the stems as the mower drops them, they pick them up broadside on and slide the hay into light, airy windrows without threshing off leaves and blossoms. They form the windrow on the raked stubble, where the hay lies untouched until the loader comes along to pick it up.

All Steel

International Harvester side delivery rakes are all steel, strong and durable.

Adjustments at Both Ends

The cylinder can be raised or lowered at both ends, giving perfect adjustment under all conditions. Made in two widths—7 foot 3 inches and 8 foot (bean special). Sold by IHC local dealers.



International, Osborne, and Keystone Hay Loaders

The Windrow Loaders

If you use a side delivery rake to throw the hay up into windrows, you will need an International, Osborne, or Keystone windrow loader. These good loaders are 6 feet wide and elevate the hay to a height of 10 feet 3 inches. They gather the hay with a gentle hand-pitching movement that does not thresh or break leaves, so are especially good for loading alfalfa and clover. These loaders are easily hitched to the hay rack and are unhitched by the man on the load, who simply pulls a rope and drives off. A forecarriage (regular equipment) holds the loaders upright when unhitched, ready to be hitched at once behind another rack. Two horses can pull them easily.

The Rake Loader

If you ted your hay after mowing and do not throw it up in windrows, use a rake loader which takes in 8 feet of swath, elevates the hay to a height of 9 feet, and is handled by one man on the load. It gets in close to the fences; it handles the hay as gently as any good farmer could wish, and it rakes clean.

International, Osborne, and Keystone side delivery rakes, tedders, rake loaders, windrow loaders, sweep rakes and stackers, are sold by IHC dealers wherever farmers use these machines. If you want to get your hay in with the least trouble and expense, in the least time, and in the best condition, buy International Harvester hay tools. Write us for catalogues.

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In This Issue: Growing Sweet Clover, First Aid in the Poultry Yard, A Rotation of Hog Pastures, "Sheep Benefit Land and Purse."

The Practical Farmer

PUBLISHED
CONTINUOUSLY
SINCE 1855

Volume 112
Number 10

PHILADELPHIA, MAY 15, 1916

50 Cents Per Year
8 Years for \$1.00

	Lot I	Lot II	Lot III	Lot IV	Lot VI
Initial weight per steer.....	877.8 lbs.	908 lbs.	918.5 lbs.	893.7 lbs.	890.7 lbs.
Value per cwt. in lot.....	\$ 7.50	\$ 7.50	\$ 7.25	\$ 7.25	\$ 7.25
Cost per steer.....	\$65.83	\$65.10	\$66.25	\$66.70	\$66.13
Feeds consumed daily per steer (last 56 days)					
Bar corn.....	9 lbs.	66 lbs.	58 lbs.	20 lbs.	66 lbs.
Corn silage.....	2.5 "	2.5 "	2.5 "	2.4 "	2.4 "
Cottonseed meal.....	4 "	5.0 "	5.0 "	4 "	4 "
Alfalfa hay.....	8.5 "	2.62 "	2.10 "	1.70 "	2.48 "
Corn stover.....	1.74 "	5.60 "	5.64 "	5.80 "	5.90 "
Mixed hay.....	1.74 "	5.60 "	5.64 "	5.80 "	5.90 "
Average daily gain (last period).....	1.74 "	5.60 "	5.64 "	5.80 "	5.90 "
Cost per 100 lbs. gain.....	\$ 9.73	\$ 5.60	\$ 5.64	\$ 5.80	\$ 5.90
Feed consumed daily per steer (last 84 days)					
Bar corn.....	12 lbs.	17 lbs.	16.5 lbs.	16.4 lbs.	16.4 lbs.
Corn and cob meal.....	4 "	4 "	4 "	4 "	4 "
Cottonseed meal.....	2.5 "	2.5 "	2.5 "	2.5 "	2.5 "
Silage.....	10 "	25 "	21 "	20 "	69 "
Mixed hay.....	10 "	6.4 "	6.4 "	6 "	6 "
Alfalfa hay.....	1.80 "	1.68 "	1.85 "	1.08 "	1.70 "
Corn stover.....	1.80 "	1.68 "	1.85 "	1.08 "	1.70 "
Average daily gain (2nd period).....	1.80 "	1.68 "	1.85 "	1.08 "	1.70 "
Cost per 100 lbs. gain.....	\$12.10	\$12.29	\$12.03	\$12.00	\$12.03
Average weight at close of exp.....	1182 lbs.	1196 lbs.	1181.6 lbs.	1155 lbs.	1189.5 lbs.
Gain for entire period.....	254 "	288 "	263 "	261 "	299 "
Average daily gain entire period.....	1.81 "	1.91 "	1.91 "	1.86 "	2.07 "
Total cost of feed.....	\$30.04	\$28.31	\$26.20	\$20.17	\$23.40
Final cost of steer.....	\$95.87	\$93.41	\$92.45	\$86.86	\$89.53
Cost per cwt. gain.....	\$11.81	\$9.87	\$9.77	\$11.18	\$7.99
Final cost per cwt.....	\$8.47	\$8.00	\$7.93	\$8.14	\$7.40
Margin necessary in lot not including pork.....	\$.87	\$.56	\$.58	\$.80	\$.14
Value per cwt. on basis of Pittsburgh market (Allow 45 cents for ship- ping expense) State College No. Pittsburgh.....	\$0.00	\$0.30	\$8.00	\$0.15	\$0.25
Pork produced.....	147 lbs.	326 lbs.	402 lbs.	345 lbs.	313 lbs.
Cost of feed to hogs per lot.....	\$35.25	\$18.54	\$18.64	\$18.54	\$20.44

	Lot I	Lot II
Initial weight per steer.....	983.9 lbs.	981.3 lbs.
Final weight per steer.....	1215 "	1296 "
Gain per steer.....	232 "	315 "
Average daily gain.....	2.34 "	2.14 "
Initial value per cwt. in lots.....	\$ 7.65	\$ 7.75
Initial cost per steer.....	\$73.36	\$76.05
Cost of feed per steer.....	\$39.20	\$35.24
Total cost of steer.....	\$114.56	\$111.29
Cost per cwt. gain.....	\$11.85	\$11.56
Final cost per 100 lbs.....	\$ 8.76	\$ 8.08
Margin necessary without pork.....	\$ 1.05	\$.91
Daily feed consumed		
Corn silage.....	20 lbs.	20 lbs.
Cottonseed meal.....	2.5 "	2.5 "
Mixed hay.....	6 "	6 "
Bar corn (last 98 days).....	8.5 "	13.5 "
Shelled corn (last 42 days).....	7.5 "	12.5 "
Molasses.....	5 "	5 "
Value per cwt. on basis of Pittsburgh market (allow 45 cts. for shipping expense) State College to Pittsburgh.....	\$0.00	\$0.70
Pork produced, 830 lbs. @ 5 cts.....	\$77.90	\$77.90
Cost of feed for swine.....	\$26.94	\$26.94
Profit from pork produced.....	\$50.96	\$50.96

Prices of feeds: Silage \$1.50 per ton; mixed hay \$13 per ton; ear corn 65 cents per bushel; shelled corn 70 cents per bushel; molasses \$31.20 per ton.

Lot II where corn silage and cotton seed meal were fed. This ration proved very expensive as a feed for the entire period when compared to the other rations fed. The value of the cattle in this lot at the close of the experiment was not as high as some of the other lots, as indicated by the summary table. The margin necessary to break even was higher in this lot than in any of the other lots. All the other lots received roughage only during the first 56 days and supplement-

mission merchant from the Pittsburgh stockyards. The entire lot of cattle was sold to the United Home Dressed Beef Company, of Altoona, Pa., at the prices listed in the summary.

CONCLUSIONS.

Project No. 519.

- Five pounds of molasses at \$31.20 per ton is not economical as a source of carbohydrates when replacing 5 pounds of shelled corn in the ration with corn at 70 cents per bushel.
- Molasses may be used as an appetizer for fattening cattle in order to get them to consume a greater amount of roughage.
- Cattle receiving molasses and a limited corn ration did not show the same degree of finish as the cattle receiving a full allowance of corn.

Project No. 504.

- The feeding of corn and bran as a concentrate, mixed hay and corn stover as roughage during a feeding period of 140 days was uneconomical when compared to a ration containing corn silage, cotton seed meal and the grain withheld the first eight weeks.
- Corn silage proved to be the most desirable roughage for fattening cattle.
- A limited ration of corn silage supplemented with mixed hay was not as economical nor as satisfactory a roughage in a ration as one containing silage as a sole roughage.

- Five pounds of alfalfa hay per head, daily, was not as satisfactory as 2½



amount of roughage per day than those not receiving molasses. The results of the experiment in this lot are in keeping with those of previous years, indicating a place for molasses as an appetizer for cattle, especially when a large amount of roughage is being fed.

Five other lots of handy weight cattle were fed to determine the value of different rations in fattening cattle. Some very striking results were obtained in some of these lots, especially where corn silage formed a major part of the entire roughage used.

Lot 1 received a ration made up of feeds commonly fed in many sections of Pennsylvania where no silage is used. This lot received a grain mixture of 3 parts corn meal and 1 part bran, mixed hay and corn stover. This combination was fed throughout the entire period. The cost of making a hundred pounds of gain in this lot during the first 56 days was \$9.73 as compared to \$5.60 in

lot with 2½ pounds of cotton seed meal per 1000 pounds live weight, except that Lot III received alfalfa hay in addition to the corn silage and received cotton seed meal at no time during the experiment. Grain was added to all lots during the last 84 days of the experiment, with the exception of Lot VI, which received corn silage, all they would consume, and 3½ pounds of cotton seed meal per head, daily. From the table it will be noted that this lot made the highest daily gain, required the smallest margin to pay for the cost of feed and were sold, in the lot, within 5 cents of the best lot, rated at \$9.30 per cwt. Lot III, which received the alfalfa hay as a source of protein, was the poorest lot of cattle, lacking the condition and finish of some of the other lots.

The results of these experiments bring out the advantage and importance of corn silage as a feed for beef production. The cattle were valued by a com-

pounds of cotton seed meal when fed as a source of protein.

5. Bran was not economical as a source of protein in a ration for fattening cattle.

6. Corn silage fed to the limit of their

appetite, supplemented with 2½ pounds of cotton seed meal per head, daily during the first three months, and 3½ pounds per head, daily, during the last two months proved to be the most economical and satisfactory ration.

See These 1916 International Harvester Hay Tools

New and Better Side Delivery Rakes

BY all means see the 1916 International, Osborne and Keystone side delivery rakes and hay loaders before your haying season starts.

All Left-Hand Side Delivery Rakes

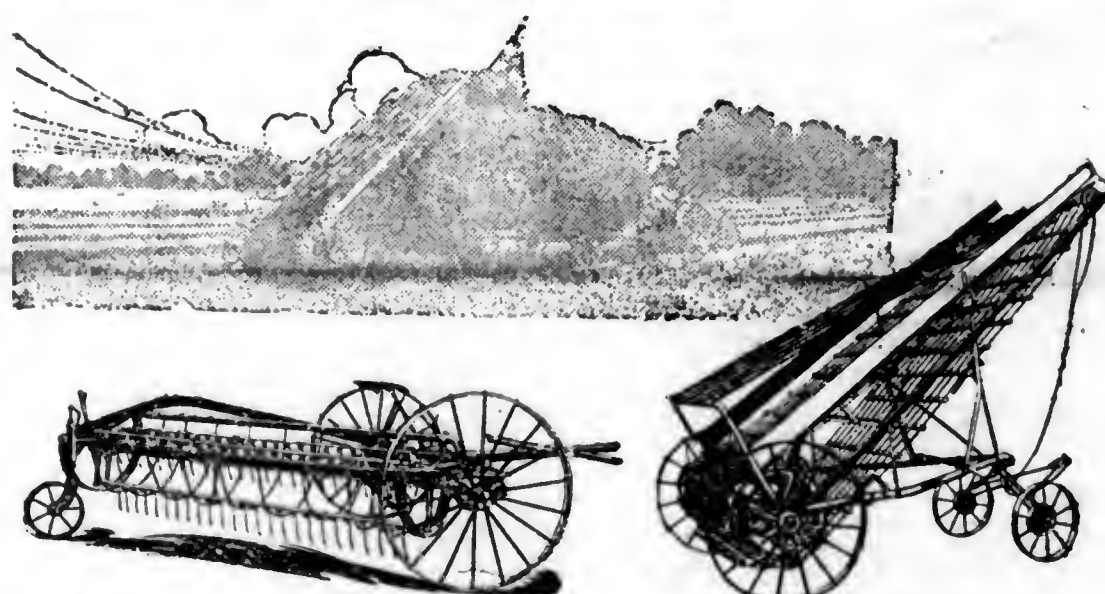
These new side delivery rakes are all left-hand rakes. Taking the stems as the mower drops them, they pick them up broadside on and slide the hay into light, airy windrows without threshing off leaves and blossoms. They form the windrow on the raked stubble, where the hay lies untouched until the loader comes along to pick it up.

All Steel

International Harvester side delivery rakes are all steel, strong and durable.

Adjustments at Both Ends

The cylinder can be raised or lowered at both ends, giving perfect adjustment under all conditions. Made in two widths—7 foot 3 inches and 8 foot (bean special). Sold by IHC local dealers.



International, Osborne, and Keystone Hay Loaders

The Windrow Loaders

If you use a side delivery rake to throw the hay up into windrows, you will need an International, Osborne, or Keystone windrow loader. These good loaders are 6 feet wide and elevate the hay to a height of 10 feet 3 inches. They gather the hay with a gentle hand-pitching movement that does not thresh or break leaves, so are especially good for loading alfalfa and clover. These loaders are easily hitched to the hay rack and are unhitched by the man on the load, who simply pulls a rope and drives off. A forecarriage (regular equipment) holds the loaders upright when unhitched, ready to be hitched at once behind another rack. Two horses can pull them easily.

The Rake Loader

If you ted your hay after mowing and do not throw it up in windrows, use a rake loader which takes in 8 feet of swath, elevates the hay to a height of 9 feet, and is handled by one man on the load. It gets in close to the fences; it handles the hay as gently as any good farmer could wish, and it rakes clean.

International, Osborne, and Keystone side delivery rakes, tedders, rake loaders, windrow loaders, sweep rakes and stackers, are sold by IHC dealers wherever farmers use these machines. If you want to get your hay in with the least trouble and expense, in the least time, and in the best condition, buy International Harvester hay tools. Write us for catalogues.

International Harvester Company of America
(Incorporated)
CHICAGO **USA**
Champion Deering McCormick Milwaukee Osborne Plano

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	Lot I	Lot II	Lot III	Lot IV	Lot V
Initial weight per steer.....	877.8 lbs.	908 lbs.	913.5 lbs.	893.7 lbs.	890.7 lbs.
Value per cwt. in lot.....	\$ 7.50	\$ 7.50	\$ 7.25	\$ 7.25	\$ 7.35
Cost per steer.....	\$6.83	\$6.10	\$6.23	\$6.17	\$6.13
Feeds consumed daily per steer (last 56 days).....					
Ear corn.....	9 lbs.	66 lbs.	58 lbs.	20 lbs.	66 lbs.
Corn silage.....	2.5 "	2.5 "	2.4 "	2.4 "	2.4 "
Cottonseed meal.....	5.0 "	5.0 "	5.0 "	5.0 "	5.0 "
Alfalfa hay.....	1.7 "	1.7 "	1.7 "	1.7 "	1.7 "
Corn stover.....	1.7 "	1.7 "	1.7 "	1.7 "	1.7 "
Mixed hay.....	2.62 "	2.62 "	2.62 "	2.62 "	2.62 "
Average daily gain (last period).....	1.71 "	1.70 "	1.70 "	1.70 "	1.70 "
Cost per 100 lbs. gain.....	\$ 9.73	\$ 5.60	\$ 6.61	\$ 8.80	\$ 5.90
Feed consumed daily per steer (last 84 days).....					
Ear corn.....	12 lbs.	17 lbs.	16.5 lbs.	16.4 lbs.	16.4 lbs.
Corn and cob meal.....	1 "	1 "	1 "	1 "	1 "
Bran.....	25 "	25 "	25 "	25 "	25 "
Cottonseed meal.....	25 "	25 "	25 "	25 "	25 "
Shelled corn.....	10 "	10 "	10 "	10 "	10 "
Mlx. hay.....	6.4 "	6.4 "	6.4 "	6.4 "	6.4 "
Alfalfa hay.....	1.88 "	1.88 "	1.88 "	1.88 "	1.88 "
Corn stover.....	1.88 "	1.88 "	1.88 "	1.88 "	1.88 "
Average daily gain (2nd period).....	1.88 "	1.88 "	1.88 "	1.88 "	1.88 "
Cost per 100 lbs. gain.....	\$13.10	\$14.22	\$12.46	\$12.90	\$ 9.85
Average weight at close of exp.....	1132 lbs.	1106 lbs.	1184.5 lbs.	1155 lbs.	1180.5 lbs.
Gain for entire period.....	254 "	258 "	258 "	258 "	258 "
Average daily gain entire period.....	1.81 "	1.81 "	1.81 "	1.81 "	1.81 "
Total cost of feed.....	\$20.04	\$28.51	\$26.20	\$20.17	\$25.67
Final cost of steer.....	\$95.87	\$96.41	\$92.44	\$92.44	\$88.20
Cost per cwt. gain.....	\$11.81	\$ 9.85	\$ 7.77	\$11.18	\$ 7.99
Final cost per cwt. gain.....	\$ 8.17	\$ 8.06	\$ 7.33	\$ 8.14	\$ 7.40
Margin necessary in lot not including pork.....	\$.37	\$.50	\$.58	\$.80	\$.14
Value per cwt. on basis of Pittsburgh market (allow 4 cents for shipping expense) State College to Pittsburgh.....	\$9.00	\$9.30	\$8.90	\$9.15	\$9.25
Pork produced.....	147 lbs.	358 lbs.	402 lbs.	345 lbs.	313 lbs.
Cost of feed for hogs per lot.....	\$25.25	\$18.64	\$18.64	\$18.54	\$20.44

	Lot I	Lot II
Initial weight per steer.....	883.0 lbs.	881.3 lbs.
Final weight per steer.....	1215 "	1206 "
Gain per steer.....	332 "	325 "
Average daily gain.....	2.39 "	2.11 "
Initial value per cwt. in lots.....	\$ 7.65	\$ 7.55
Initial cost per steer.....	\$ 7.30	\$ 7.05
Cost of feed per steer.....	\$ 20.28	\$ 35.28
Total cost of steer.....	\$114.32	\$111.33
Cost per cwt. gain.....	\$ 14.82	\$ 11.50
Final cost per 100 lbs.....	\$ 8.76	\$ 8.68
Margin necessary without pork.....	\$ 1.05	\$.91
Daily feed consumed.....		
Corn silage.....	20 lbs.	20 lbs.
Cottonseed meal.....	2.8 "	2.8 "
Mixed hay.....	6.5 "	6.5 "
Ear corn (last 98 days).....	8.5 "	13.5 "
Shelled corn (last 42 days).....	7.5 "	12.5 "
Molasses.....	5.5 "	5.5 "
Valued per cwt. on basis of Pittsburgh market (allow 4 cents for shipping expense) State College to Pittsburgh.....	\$9.60	\$9.70
Pork produced, 829 lbs. 95 cts.....	\$72.90	\$72.90
Cost of feed for swine.....	\$26.91	\$26.91
Profit from pork produced.....	\$50.99	\$50.99

Prices of feeds: Silage \$3.50 per ton; mixed hay \$13.00 per ton; mixed corn \$13.00 per ton; cottonseed meal \$20.00 per ton; ear corn 65 cents per bushel; shelled corn 70 cents per bushel; molasses \$31.20 per ton.

Lot II where corn silage and cotton seed meal were fed. This ration proved very expensive as a feed for the entire period when compared to the other rations fed. The value of the cattle in this lot at the close of the experiment was not as high as some of the other lots, as indicated by the summary table. The margin necessary to break even was higher in this lot than in any of the other lots. All the other lots received roughage only during the first 56 days and supplement-

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- Five pounds of alfalfa hay per head, daily, was not as satisfactory as 2½

Redeeming the Old Orchard

JOHN ALBERT HART.

Somewhat over two years ago I rented the place on which we live (we have purchased part since) for a period of three years. There is on it an old apple orchard of about 200 trees, mostly seedlings, but quite a few Baldwins, Glory Mundis, etc. I found the orchard in a sadly neglected condition. One man told me that it had never been sprayed and, to his certain knowledge, had not had a decent pruning for twelve years. It certainly looked it, and I proceeded to do what I could to remedy things, but as I had only a three-year lease I could not afford to give it the care it ought to have. However, I got a man to help me and we gave it a liberal pruning in the early spring, after which we applied a liberal coat of the lime and sulphur solution, putting on an average of about a gallon to a tree.

While the result was not as marked as I had hoped, it was manifest in larger size and better colored fruit, but the yield was less, due, no doubt, to the vast amount of bearing timber cut away in pruning. The trees were so close together that I knew no permanent good could be done without cutting out some of them. They averaged only about a rod apart, except where some were missing.

My experience demonstrated that much can be done to redeem the old orchard if one goes at it with vim and perseverance, and the result will justify the means; but it is a difficult task. Were I owner instead of renter I should have laid the axe to the root of more than half of the trees, giving the remainder a heavy pruning, spraying liberally and cultivating thoroughly. By this means an old orchard could be brought back to bearing a good marketable quality of fruit—but it can never be brought to that degree of perfection that can be attained by thorough and constant care from the beginning. However, we have managed to sell about \$100 worth of fruit per season from it and have fed large quantities to hogs and stock, besides keeping the family liberally supplied, so I feel that it has not been a failure.

Scattered up and down over the country are thousands of old orchards, of which this is fairly representative. They were planted 30, 40 or 50 years ago when the idea was to have plenty of fruit for home use, and but little attention was paid to an outside market. It was quite common then to plant trees and care for them until they came to bearing, after which no attention was given, except an occasional pruning. But the orchard of today has become a great commercial factor and the fruit must be up to a high standard to bring a profitable price. New varieties have been introduced and much has been done to better the quality and size. The old, neglected orchard is a menace to all others, an eyesore to all who love order and beauty in the things about them. In many states radical laws are being passed to help the horticulturist to overcome this drawback.

Yes, the old orchard can be redeemed, or at least partly so. But in the long run, for commercial purposes, I believe that no amount of later care and skill can atone for years of neglect. One of two things ought to be done with every tree—either it should be so cared for as to yield a crop of fairly perfect fruit, or it should be cut down and the space given to that which will yield a profit.

Statistics show that of every dollar paid for foodstuffs in this country 45 cents goes to the farmer, 15 to legitimate marketing costs and 40 to middlemen.

Cost and Location of Earth Roads

The cost of hauling over country roads is largely determined by the size of the load that can be hauled, the number of trips that can be made in a day and the wear and tear on teams and equipment, according to the Office of Public Roads, Department of Agriculture. Steep grades as well as ruts and mud-holes serve to decrease both the speed and the load. On the principle that a chain is no stronger than its weakest link, the maximum load that a team can draw is the load that it can draw up the steepest hill or through the deepest mud-hole on that road.

Wherever possible, roads should be located on straight lines between terminal points. In hilly or mountainous country, however, the attempts to keep roads straight between terminals often leads to the serious error of heavy grades. Straightness and grade must therefore be handled together. The best location is one which is straight in general direction, is free from steep grades, is located on solid ground and serves the largest possible number of people. Roads should be located for the benefit of the public as well as the private land owner.

The elimination of one or two steep hills on a line of road will frequently enable horses to draw three or four times as much as they could draw on the old road. It takes approximately four times as much power to draw loads up 10 per cent. grades (10 ft. vertical in 100 ft. horizontal) as on a level, but on a 4 per cent. or 5 per cent. grade a horse can usually draw (for a short time) as much as he can draw on a level. A 4 per cent. grade is therefore considered the maximum on roads subject to heavy hauling. Many steep grades may be avoided by locating the road around instead of over the hill—the handle of the bucket is no longer when held in a horizontal position than in a vertical. By going around we avoid two steep hills.

If the road must pass up a steep hill or mountain sides, the steepness of the grade may be decreased by increasing the length of the road. In other words, eliminate steep grades by locating the road on curved or zigzag lines, and not in a straight line from the bottom to the top of the hill. These curves should be carefully plotted and the straight stretches located with an instrument. This improves the looks of the road and does not add materially to its cost.

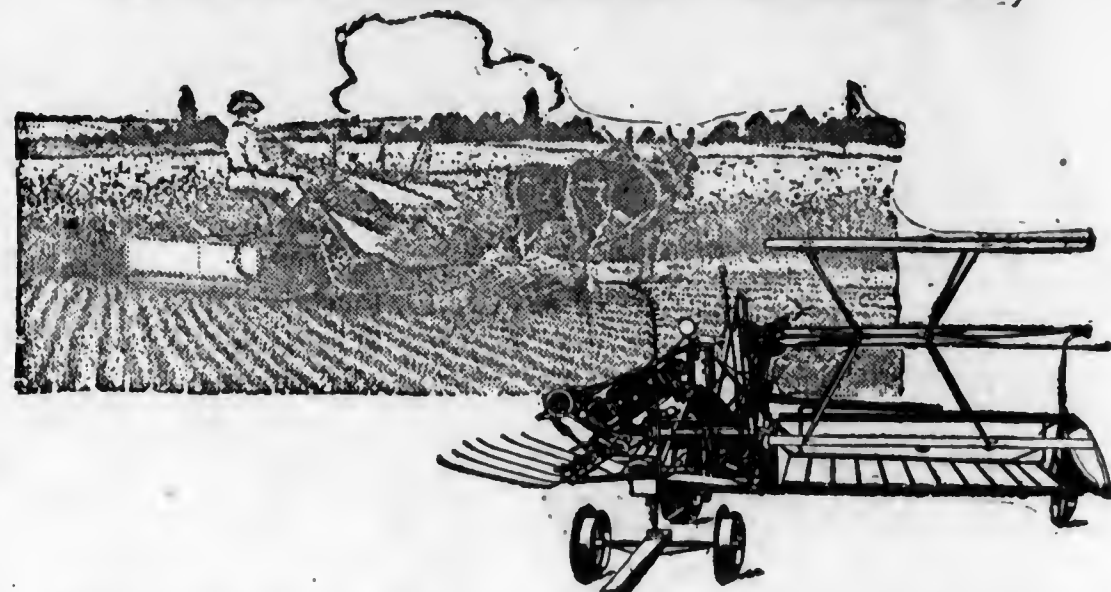
In studying the relation of grade to distance the following calculation is interesting: To lift a ton one foot high requires 2,000 foot pounds of energy; on a road the surface of which offers 100 pounds of tractive resistance per ton the same energy would roll the ton a horizontal distance of 20 feet. To save one foot of grade the road may therefore be lengthened 20 feet.

Roads should never be located so close to stream beds as to be subject to overflow, or on ground which is constantly damp and marshy.

The earth road should have at least six hours of sunshine each day. This can be secured either by locating the road with southern or western exposure, or by having such brush and trees as impede the drying action of the sun and wind removed. With gravel and stone roads this is not so necessary, as a certain amount of moisture is needed on such roads, especially in summertime.

Relocating roads is not an engineering problem alone. One must also consider the effect of the road on those who now live upon it. Many farmers dislike to have the road placed back of their house or out of sight of it. It requires tact and good judgment to secure a suitable location without arousing antagonism.

Own An IHC Binder



KNOWING the conditions in your harvest fields as well as you do, it will be an easy matter for you to pick out the right grain binder for your work. Note the details of construction—How is the main frame built? Is the main wheel large enough and wide enough to give plenty of traction? Is there a simple means provided for quickly and easily taking the strain off the canvas at night, or when the binder is out of use? Are ball and roller bearings provided to lighten the draft? Will the elevator take care of both light and heavy stands of grain? Is the knottor simple and sure in action? These are the things that count.

In the IHC binders—Champion, Deering, McCormick, Milwaukee, Osborne and Plano—these things and all other details are taken care of. Own an IHC binder. The same arguments hold good for the twine you use. Ask for and insist upon getting an IHC twine, made to work in the binder you buy, and sold at the lowest price consistent with IHC quality.

Your local dealer can furnish you with IHC binders, repairs and twine. See him or write to us for complete information.

International Harvester Company of America

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Champion Deering McCormick Milwaukee Osborne Plano

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This Digger costs little, is light and simple, and will last a lifetime. Fitted with steel prongs, malleable wings, and chilled point or share. Built high—will not clog in weeds or dry or green vines. Write for catalog & price. We'll send promptly, and include information about the famous Hamburg Plows and Plow Parts.

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What averaged in 1915 over 25 bushels per acre
Oats averaged in 1915 over 45 bushels per acre
Barley averaged in 1915 over 60 bushels per acre

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Number 10

GROWING SWEET CLOVER

By A. E. GRANTHAM

UNTIL very recently sweet clover, or Bokhara clover, as it is sometimes called, was regarded as a mere weed in many localities where it has been found. Its chief use heretofore has been that of a honey plant, as it furnishes excellent bee pasture. Now sweet clover is becoming more widely grown as its value for forage, hay and for soil improvement becomes better known. There are several varieties, of which the common white sweet clover (*Melilotus alba*) and the yellow sweet clover (*Melilotus officinalis*) are the most important agriculturally. The white is the one most commonly found, and makes a more vigorous, upright growth than the yellow variety. The plant when a few inches high closely resembles alfalfa, for which it is often mistaken. Sweet clover is a biennial, growing 1½ to 3 feet in height the first year, and developing a rather large tap root, in which is stored considerable food for the second season's growth. The second year it attains the height of 4 to 6 feet, depending on conditions. The plant then flowers, produces seed and dies. The young growth of sweet clover is very succulent, and although resembling alfalfa in appearance, can be readily distinguished from the latter by its bitter taste and strong, fragrant odor when dry. The later growth is not at all like alfalfa, as the plant becomes more open, with scattered leaves, and the stems quite woody upon maturity. Sweet clover is quite generally found

along railroad embankments, near old quarries, near the roadside or where the soil has been thrown into mounds or ridges. This may be accounted for by the fact that, being a legume and getting its nitrogen from the air, it prefers those locations that are well drained and the soil aerated. It is not unusual to find sweet clover growing in old gravel beds, on rough hillside land where little else will grow. In fact, the plant is found growing wild on so many different types of soil and under such widely varying conditions that it seems to adapt itself to almost any environment. However, it is noted that the best and most persistent growth is made on land that is naturally well supplied with lime. Cultivated fields may often be more deficient in lime than the roadsides, and for that reason liming must be considered in growing the crop under field conditions.

Sweet clover is very resistant to cold and survives the winter as far north as Michigan. The chief danger to it in winter is "heaving out." The plant has a long tap root, with few, if any, large branch roots. With the alternate freezing and thawing of late winter, the entire plants may be lifted out of the ground, if the soil is not well drained. It is the experience of the writer that sweet clover will "lift out" more readily than alfalfa under same conditions. Sweet clover may be seeded in the spring with a nurse crop, as oats or barley, in the more northern states. Farther south it is better to prepare the land especially for the clover, and seed in August.

In the latter case the land should be plowed early, so as to have the soil compact with a loose mulch on top. A crop of early potatoes may be removed in time to fit the land for clover. The clean cultivation and high fertilization that usually accompany the growing of potatoes make an excellent preparation for the sweet clover. Where an early crop does not precede, the land should be plowed not later than June, and harrowed at intervals of a week or ten days to destroy all weeds and to retain the moisture. Where a nurse crop is used, especially winter wheat or rye, it is best to sow the sweet clover in February or March. The seed is covered by the alternate freezing and

thawing of the ground. There is an added advantage in this method, since sweet clover contains a fairly high percentage of "hard" seeds, which do not germinate promptly. Winter seeding seems to have the effect of causing more complete germination of these hard seeds. With a nurse crop the growth of clover is hardly so satisfactory as alone, south of Pennsylvania.



Sweet Clover as it Looks When Ready to Cut

Lime will be required in much the same measure as alfalfa demands it. It should not be considered that sweet clover will do well on humid soils unless the soil is neutral as regards acidity. Nor should inoculation be neglected. Since the sweet clover plant secures a large part of its nitrogen from the air through the bacteria which develop nodules on the roots of the plant, care must be taken to apply both

lime and inoculation. If sweet clover or alfalfa has not previously grown on the field, inoculation may be made by the use of commercial cultures or by the application of 300 to 400 pounds of soil per acre taken from a sweet clover or alfalfa field. The organisms which develop the nodules on these two plants are so nearly alike that they may be used interchangeably. The soil should be applied on a cloudy day or after sundown and harrowed in at once. On eastern soils at least one ton of burned lime or two tons of ground limestone (unburned) should be applied at least ten days before seeding.

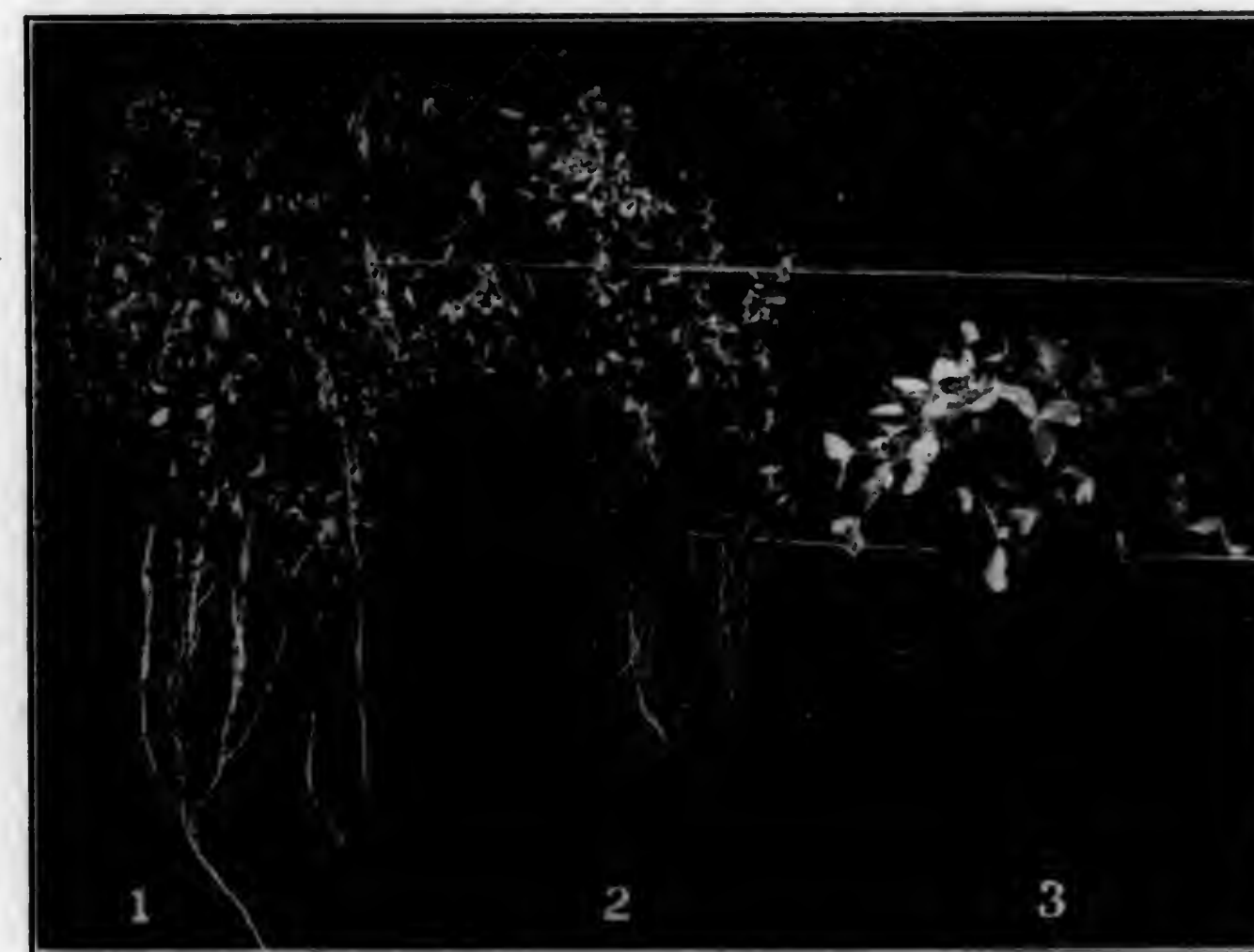
Some fertilizer, at least 300 pounds of acid phosphate, should be applied per acre just before seeding. Potash to the extent of 5 per cent. should be used if prices permit.

Sweet clover is not recommended for general use where red clover, crimson clover and alfalfa can be successfully grown. The agricultural public should not be deceived by the great interest manifested in this new crop, as it requires a certain amount of attention to grow it, and some judgment in order to utilize it to the best advantage. It is probably better adapted than any other legume for thin, rough soils where it is difficult to get other crops to grow.

Sweet clover is not relished by stock at first. In fact, they will refuse to eat it when blue grass and the ordinary clovers are present. However, stock will finally acquire a liking for sweet clover, if starved to it for a few days. They then do very well and thrive, as the plant has high nutritive value. In composition it ranks along with alfalfa, but on account of a bitter principle known as eumarin, it is not palatable to stock at first. The great advantages of sweet clover as a forage crop are its hardiness, vigor and drought resistant qualities. When used for pasture the stock should be turned on early enough to keep it fairly well eaten down, as this will cause additional young, tender shoots to appear, the portion most readily eaten by stock. Hogs and cattle will make good gains once they have learned to eat it.

If properly handled sweet clover can be made into hay that is a fair substitute for red clover hay. One precaution is to be observed in cutting. The mower should be set high enough to miss the lower branches on each plant. If cut close to the ground the plant dies. The new growth comes from the underlying branches which are left. The clover should be cut before the first buds for blossoms appear, as the plant rapidly becomes woody and coarse after that time. The yield of hay in most cases should exceed that of red clover, as under good conditions two cuttings may be secured in one year. The total yield of hay may vary from 3 to 4 tons per acre per year.

It is probable that the greatest use for sweet clover will come in soil improvement. Aside from the fact



1. Sweet Clover 2. Alfalfa 3. Mammoth Red Clover
All Seeded at the Same Time, But Note the Difference in Root Growth

For the best results the land should not be acid.

(Concluded on page 224)

The Practical Farmer

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MAY 15, 1916

The Nub of it

THE "agger" man on the Interstate Commerce Commission reports that in one year the railways of this country hauled 1,949,689,599 tons of freight, of which 195,586,840 tons were the products of the farms. This latter immense tonnage was hauled over 650,000 miles of steel rails and smooth roadbeds at an infinitesimal proportion of the cost of production. Before it reached the railroads, however, it was hauled over 2,300,000 miles of dirt roads. In most cases these common dirt highways were "a rocky road to Dublin," ungraded, full of ruts, holes and other eyesores, which added an appreciable amount to the cost of production, and levied a heavy toll on the pocketbook of every consumer.

After all, the nub of the good roads movement is this: Building \$14,000 or \$15,000 a mile highways for show purposes, where they are not actually needed, is the luxury of the movement. The improvement of the common dirt roads, on which the real business of hauling is done, is the necessity. The farmers should insist that the state and the nation should put the improvement of the common dirt roads in the first place and not in the last.

Live Stock and Dairy

IN our issue of February 15th, this year, we announced our plans for an enlarged Live Stock and Dairy Section of The Practical Farmer, setting forth as reason our belief that the conditions throughout the territory in which this paper circulates encourage an increase in live stock on the farm, and that our readers, alive to this situation, are perhaps more interested in this department of farming than any other; in making this announcement we invited an expression of opinion from our readers regarding this plan, and stated that the carrying out of the program largely depended on the wishes of our subscribers.

The letters we have received from all sections of our territory in response are most gratifyingly encouraging and show so live an interest in animal and dairy husbandry as to confirm our views regarding the need of more attention to this department and have determined us definitely to go even further than we had originally planned in this direction.

We are pleased to announce that, beginning with this issue, W. H. Tomhave, head of the Department of Animal Husbandry at Pennsylvania State College, will take editorial charge of our Live Stock and Dairy Section. As Professor Tomhave is a well-known and practical authority on all lines of animal husbandry and as such, is highly thought of not only throughout Pennsylvania, but all of its neighbor states, this announcement is proof sufficient that our newly enlarged department will be thoughtfully and seriously edited, and will be an earnest, progressive aid to the farmers of this section in the promotion of animal husbandry in all its branches.

Believing that more cattle, swine, horses and sheep

should be raised on the farms of our readers, it will be our aim to so diversify our articles as to cover in each issue as many different branches of the live stock industry as possible. To this end, and in order that our pages may carry not only the best theoretical and practical articles by well-known authorities, but as well the actual experiences of our readers themselves along live stock and dairying lines to as large an extent as possible, we solicit contributions from our readers of the stories of their own practical experiences, involving both successes and failures, in this department of farming. Thus may we all help and be helped in the promotion of, and the securing of a profit from, the growth of the live stock and dairy industries on the farms of the Middle Atlantic States.

Putting Convicts to a Good Use

THE National Committee on Prisons has recently sent out a report relating to convict labor on roads in Georgia, which is worth noting.

It appears from the report that on June 1st last there were 2,965 felony and 3,185 misdemeanor convicts employed on the roads in that state, which it is claimed is a larger number than is employed in a similar capacity in any other state. These two classes of prisoners in that state are under the supervision of the State Prison Commission, and by it these prisoners, except boys under fifteen, or aged or infirm convicts, are apportioned to the different counties wanting them for employment on the public highways.

When thus employed, rigid regulations are enforced as to proper guards, clothing, bedding, medicinal supervision, etc.; the diet is fixed by the Prison Commission, and must be of a certain character.

That this system of employing the convicts is superior to the old system which prevailed in Georgia, of leasing the convict labor to private parties, and more profitable to the public, has been proved in that state. The convict labor as exploited for private gain, became a public scandal, as it did in other states where it was given a trial.

So far as we know, in every state where convict labor has been, or is being, used in the construction and maintenance of the public highways, the experiments demonstrate that this method of using it is the most satisfactory that has yet been found. It removes the competition between prison made and factory made goods, and puts the prison labor where it will accomplish the most good, both to prisoners and public.

A pertinent question is asked by the National Committee, as to whether some of the value of the work done by the convict could not be returned to him in the shape of wages. When he has any one that has been dependent on him for support, it would seem not only a matter of justice, but also of public economy, that a certain proportion of the value of his labor should be paid to his family or other dependents.

Ordinarily the innocent suffer with the guilty, financially as well as otherwise. The labor of a healthy convict is worth, or should be made worth, a certain amount to the state, and that amount, or a portion of it, should be paid to those dependent on him.

Legislation cannot shift all of the burden which falls on the innocent to the guilty, but it can to some degree shift the financial end, in most cases, to where it ought to rest.

"Unshackling" the Postal Savings Bank

WE received a call a few days since from our New Jersey friend, Mr. John B. Alden—a man with an idea; Mr. Alden was born on a farm in the Middle West nearly three score and ten years ago; during a busy life he has been a bookseller, a publisher, and finally came "back to the land" and settled down on a New Jersey farm—that is, as much as Mr. Alden can ever settle down; for he is alive with that idea of his—and it's a big idea and is keeping him busy! Mr. Alden wants "square deal banking for farmers," and he believes that our "Uncle Sam" is the proper person to give it to us; he isn't asking our Uncle to go into the banking business—because he's in it already—though conducting it rather badly; his idea is that Uncle Sam's Bank—the Postal Savings Bank—should be "unshackled" and become the blessing which the farmers thought it was going to be when they advocated its establishment, and not the "no account thing" they found it when they got it. Mr. Alden wants the Postal Savings Bank to be the agent for the "mobilization" of the farmers' and laborers' money—through the payment to these depositors of all the interest the money can earn (less the expenses for the conduct of the bank) when used in the form of "rural credits" to finance the farmer, and increase the prosperity of the nation through the promotion of

its producing members. He calls attention to the fact that there is nothing new in such a plan, as in Australia the state savings banks are the source of agricultural credits, and that in the state of Victoria nearly one-half of the entire population are depositors in the State Savings Bank; the same ratio applied to this country would give us an army of about forty-five million depositors—and enough money to finance our farming interests in a way which would place us agriculturally at the head of the nations of the world. Mr. Alden is a thinker and a worker; he has mapped out a plan for this "unshackling" of the Postal Savings Bank which is ingenious and, for the most part, practical; he has talked to many men and found many supporters; he has put his plan in the form of a bill which he hopes to have introduced before the close of this session of Congress. And here's success to you, Brother Alden! We like to see a man go at an idea in the altruistic, enthusiastic way you've tackled this big problem; and while we aren't "financiers" and so can't give a "high-brow" opinion, we think you're on the right track. Anyway, you'll "start something" in a direction where something ought to be started, and out of this start may come some real help to the farmers, who today have to "finance" themselves without the help and encouragement they as the real producers deserve.

The "Why" of the Gasoline Price

THE time was when the farmer and gasoline were as wide apart as the poles. Now they are intimately connected by the increasing uses to which gasoline is put on the farm. Hence, the skyward tendency of the price of gasoline in the last few months is of immediate and painful interest to a large proportion of the farmers most everywhere.

Just why gasoline should increase in price so rapidly and enormously has been a matter of speculation. The user, while digging more deeply into his pocket to pay the price, can give no reason that appeals to him, while the producer resurrounds poor old "Supply and Demand," which used to be so potent, but now apparently "cuts no ice" when analyzed.

The St. Louis Post Dispatch has been doing a little investigating and finds that in one of the main fields, Oklahoma, the production of crude oil in 1915 was in excess of the production in 1914. And it also finds that the Standard Oil interests which operate in Oklahoma, have bought and stored in that state not less than 70,000,000 barrels of crude oil at from 25 to 30 cents a barrel, which it now holds at \$2.00 to \$2.15 per barrel, showing a profit of about \$100,000,000.

In this connection, a New York dispatch states that the profits of the Standard Oil Company of New York for 1915 were more than double those of the preceding year, the annual surplus increasing from \$1,736,000 to \$9,761,663, and the total surplus from \$16,701,591 to \$26,463,254. This is only the showing of one company out of the many into which the original was divided by the United States Supreme Court.

By the way, that division was like uprooting a Canada thistle patch and distributing it over the farm. The last state of that farm was worse than the first.

Take the "gentleman's agreement" that is suspected to exist between the different corporations which sprang "full armed" from the original Standard Oil Company, the fixing of prices for the crude oil by the subsidiary companies in the different oil fields, and the many thistle patches which are sucking up the profits, and combine them, and you have the greatest part of the high price of gasoline.

Bulletin Helps for Farmers

"Raising Beef Cattle," is the title of Bulletin No. 138, issued by the Pennsylvania State College School of Agriculture (State College, Pa.), and is the account of an investigation and experiment, covering three years, to determine the possibilities of raising beef cattle profitably on the farms of Pennsylvania; the account of this experiment and the conclusions to be drawn therefrom will be of real interest to Pennsylvania farmers, and the farmers of adjoining states as well; the bulletin is well illustrated and carefully written. It will be sent without charge, on request, by the College's Agricultural Experiment Station.

Sheep raising farmers will be particularly interested in a new bulletin on "Sheep Scab" (Farmers' Bulletin No. 713), issued by the United States Department of Agriculture. Farmers who have been troubled with this contagious and injurious disease in their flocks will welcome the information and help set forth in this pamphlet, the result of governmental experiment and experience.

MY FATHER

By ROBERT S. TERRY

(EDITORIAL NOTE.—Since the sad announcement, in our issue of Jan. 15th, of the death of our good friend and Associate Editor, Mr. T. B. Terry, we have received a number of letters from our subscribers, asking that we publish his biography; it has been our intention from the time of Mr. Terry's death to do this, but we were anxious to have it as complete and authentic as possible, and accordingly preferred to wait until we could obtain a biographical sketch from the pen of a member of Mr. Terry's family; it is with gratification, therefore, that we present the following sketch written by his son and helper in his work.—The Editor.)

Theodore Brainard Terry was born in Lafayette, New York, January 2, 1843. He was one of eleven children, the son of Fannie Howell and Reverend Marshall Terry. His father was a Congregational minister.

He was always of a very ingenious and inventive disposition; at the age of fourteen he took first prize at a county fair



The Late T. B. Terry
His last picture and an excellent likeness

for a steam engine which he had made, and which actually ran. He attended high school in Painesville, O., until he was seventeen, when he entered Western Reserve College in Hudson in 1860. He broke down from too much confinement and study, stayed out a year and tried to again continue his work, but his health would not permit him to do so. While in college he, with two others, stood at the head of a strong class, taking first prize for written translation in Greek. He was advised by doctors to get out into the open air, so he left school work for good, and went into the butter and cheese business with S. Straight & Co., in which he was able to get plenty of outdoor exercise.

March 1, 1865, he was married to Eleanor M. Tillotson, of Thompson, O. In 1869 he suffered a heavy financial loss, due to the rashness of a Chicago real estate man, of good reputation until then. Because of this he traded his town property in on a run-down farm at Hudson, O. Here he lived for the remainder of his life.

He was in debt at the beginning about \$4000, for equipment and purchase. But at the end of a few years he had cleared the debt, built some and saved money besides. Farm work was difficult and new to him at first, being a village boy. Not being a woodsman, and not looking overhead, one day his ax caught on a limb, and glancing, made a fearful di-

agonal cut across the cords and bones of one foot. The doctor stood over him all one night fighting off lockjaw, giving him, as he said afterwards, "enough laudanum to kill six well men." This cut laid him up about six months. At a farmers' institute he made the remark that that cut was the best thing that ever happened to him, for it taught him to farm more with his head and less with his hands and back. He spent this time planning out systematic ways of farming; that is, ways in which he could grow the best kinds of crops. He began specializing in potatoes and strawberries. In 1882 his potato crop of 7000 bushels brought him about \$2800 and for two or three years after that the same amount annually. In 1882 he took the first prize of \$50, offered by the Ohio State Department of Agriculture for the best detailed report of actual profitable farm management and practice. This report was published in the Annual Agricultural Report for that year.

In 1880 he was one of the first three farmers ever regularly employed by any state to lecture at county farmers' institutes, then first established in Ohio, and proving so successful that they were soon adopted in all other states. The other two lecturers were John Gould, of Aurora, Ohio, and Waldo F. Brown, of Oxford, Ohio. Later on he lectured in many other states.

About this time he and his great friend A. I. Root, of Medina, wrote three books, "The A B C of Strawberry Culture," "The A B C of Potato Culture," and "The Winter Care of Horses and Cattle." He wrote "Our Farming" in 1892, this being the story of how he made his run-down farm produce both profit and pleasure, with the help of his wife and children.

About eighteen years ago he developed certain kidney troubles, with a tendency to Bright's disease. The doctors told him plainly that he probably had not more than a year or two to live. He then began a careful study and care of himself, as he resolved that he would get well. He began taking the proper foods and exercise, taking cold baths, ventilating his house more healthfully, etc.—in short, doing everything in his power to get well; and he succeeded. He gave up his institute work at this time, but continued to write for The Practical Farmer. A short time before his illness he was offered the position of professor of agriculture at Ohio State University, but he preferred to remain on the farm and continue his writing.

After his breakdown he turned to the study of hygiene and health, in the same thorough manner in which he did everything, resolving "to do everything the best he could do or learn how to do." He knew that "where there's a will there's a way," and never recognized the word "fail." He spent the remaining years of his life improving his own health and helping every one else to improve theirs. He wrote "Health Hints" for The Practical Farmer, and also the book, "How to Keep Well and Live Long," telling his own experiences and difficulties and how he remedied his weakened condition. He lectured very little after this except on the subject of health.

Until about two months before his death he felt pretty well. Then we began to notice that he did not look so well. We feel that he probably would have lived many years yet, as he had expected, but for the fact that he did a terribly hard and trying job of painting on the flat roof of a large covered cowyard. He was forced to take an unnatural posi-

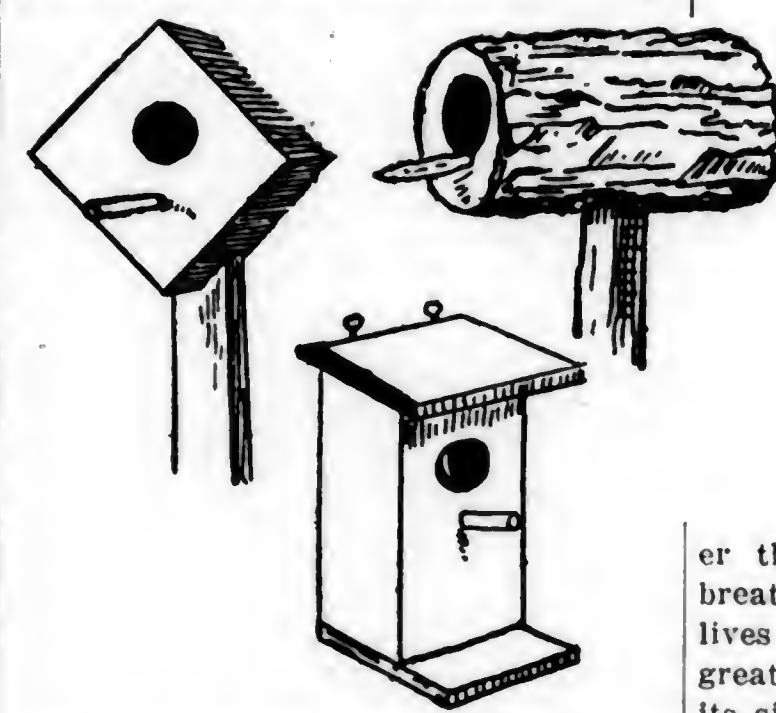
Do Something for the Birds

By MABEL G. FEINT

Are we doing anything for our friends, the birds, this year? They add so much to the joys of life, and are so vitally necessary as an economic factor in the success of our farming operations that we should not begrudge them a little time and thought. This is the time of year when our feathered friends are choosing homes in which to rear their young. Cannot we lend them a little aid in making the home secure from destructive storms, and from their enemies, the cats, hawks, crows, owls and the obnoxious English sparrows?

Very simple box houses are quickly adopted by our native birds of hole nesting habits, if the boxes are not too new or bright in appearance. They should be placed high in the trees, on posts, or under the eaves, facing away from prevailing storms, with a small hole in the bottom of the box to drain off any water that might enter.

If the round entrance hole is made from one inch to two inches in diameter, according to the size of the box, and the bird it is designed for, the tenants can defend their strongholds against the wastrel sparrows and their larger bird enemies. Among the birds who love to build their nests in boxes or holes in stumps, etc., are the bluebirds, martins, wrens, nuthatches, flickers or high-holes, tree swallows, fly catchers and many others. Just a little care of them during nesting time would soon increase their numbers to a wonderful extent. The absence of the forests and the hedgerows that flourished throughout the country before these days of "clean" farming has led to a great diminution of their numbers. And as a consequence we are tormented with white grubs, cutworms, grasshoppers, scale insects, chinch bugs,



rose bugs, squash bugs, corn weevils, nut weevils, clover weevils, and other pests too numerous to mention. These pests are favorite foods of the birds. There are birds that eat even the potato beetles, as the rose breasted grossbeak. But our lack of foresight in caring for our bird helpers has led to such a scarcity of them as to make us pay dearly for our neglect. It has been proved possible for those who conserve bird life in effective ways to grow fine crops of fruit without spraying, and that in in-

fered countries at that, so effectively do the birds subdue insect life that is injurious to the farmer's pursuits.

Not many years ago large colonies of purple martins could be seen about the country nesting in the martin houses provided for their use. Now not one person in fifty knows a martin when he sees it, and we seldom see one, anyway—all because the houses went to decay and were not rebuilt. This bird is the largest of the swallow family and very valuable to the farmer, as three-fourths of its food consists of harmful insects, including bugs, beetles and weevils. Let us encourage their return by placing houses for their use. They are the only birds that nest in colonies. So if houses of several rooms are built the openings should be about two inches in diameter, so the martins will occupy them. An inverted half barrel divided into sixteen or more compartments, with a 2-inch opening near the top of each, and with a small perch below the opening, will be just as satisfactory to the martins as the expensive houses sold by manufacturers. It should be mounted on top of some small building, or tall pole, and should have a cone-shaped roof of tin for protection from rains, with small holes for drainage, in the bottom.

The bird's temperature is much higher than that of most animal life; it breathes faster; therefore, in a way, lives faster. As a result, it consumes great quantities of food in proportion to its size. Birds seem to be always hungry, and busily hunting food. It is said that a bird completely digests a full meal in from thirty minutes to two hours at most. And the young grow so fast that in nesting time the parents are doubly useful in hunting insect life with which to satisfy their clamorously hungry little ones. How necessary it is that we help to make these little ones safe, that we may enjoy their charms, and profit by the services they will render us so generously in future.

(Concluded on page 218)

tion, holding the brush out in front of him at arm's length; the reaching, twisting and continuance of this threw a strain on his back and bladder that caused an inflammation. They were susceptible on account of having been weakened many years before and were unable to resist the terrible inflammation resulting from overstrain. His habits of life would have preserved his health had he not mistakenly severely overtaxed his endurance. He realized for about two weeks before his death that he could not recover, and dictated

the disposition of all his affairs. He passed away on New Year's morning, 1916, just the day before he would have been 73 years of age. Left to mourn the loss of a loving and wise counselor are his wife, a daughter, Mrs. Grace T. Ritchie, of Columbus, O., and myself. There are five grandchildren, Robert and Theodore Ritchie, Carroll and Lynne Thompson, and Eleanor R. Terry. Two children preceded him to the great beyond, a son dying in infancy, and a daughter, Mrs. Lilian M. Thompson, who died April 28, 1898.

THE GARDEN

All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

Edited by W. F. MASSEY

May in the Vegetable Garden

In most of our territory May is the great planting month. Down here in the sunny southeastern corner of Maryland we can plant in our light soil many things that cannot be planted in the latitude and heavier soil of Pennsylvania. Writing this the last of April, the season is still very backward and cool, and though here we have had no frost for several weeks there has been too much cold rain to favor the growth of any tender plants.

My first planting of corn is up, but it has a very bilious appearance and needs the warm sunshine badly. Still I always take some risk in order to be in among the earliest with everything.

Where the soil is heavy clay loam one should never be in too great a hurry in the spring, for if the soil is broken and worked too wet it will be in a bad, cloddy condition all summer. Therefore wait in patience until the soil is in good condition for working, for there is nothing gained by putting seed in cold, cloddy and wet soil.

My tomato plants have been spotted out in the cold frames for two weeks, and have been daily exposed to the weather, for I like to get them with dark purplish stems rather than tender green, showing that they are getting to their hardest condition.

In most seasons I set out the first planting of tomatoes the last week in April, but this season it has been useless to take the risk, as the plants are better off in the frames. On the 15th of April I did set out a solitary plant as a sort of advance guard, and that plant has lived without any protection.

But in the greater part of our territory it is seldom safe to set tomato plants in the garden until near the middle of May, or in some sections even later. Having an abundance of plants, I will set some the first week in May, holding back the reserves in the frames to be ready for accidents. Still, by covering with soil I have often carried the tomato plants through quite a freeze, and for an ordinary light frost I use some conical cardboard protectors which a friend in the South sent me last year. I tried these last year two or three nights with perfect success. Then another party sent me some protectors made of cotton cloth stretched on a wooden frame. These being taller than the paper ones, are better when the plants get large.

Spraying is essential with the tomato if one wishes to keep the foliage in healthy condition. Spray with Bordeaux mixture in the frames, and again as soon as set out, and again when the first tomatoes are set. This will ward off the leaf blight and to a great extent prevent the rotting of the fruit. One pound of lead arsenate in 50 gallons of the Bordeaux mixture will take care of any potato bugs and green caterpillars that attack the plants.

Then as soon as the early Irish potatoes are above the ground you will see the Colorado beetles crawling around and laying patches of orange-colored eggs on the under side of the leaves. Spray at once with one pound of lead arsenate in 30 gallons of water with some corn syrup added to make it stick better. These mature beetles eat very little but they do eat some, and every one of these killed means hundreds of the larvae prevented from hatching. In

the garden patch much can be done by going over the plants and crushing the patches of eggs. This is more easily done with the broad leaves of the eggplant than those of the potato. The beetles are just as bad, or even worse, on eggplants than on potatoes.

Do not set out eggplants until the soil is well warmed up. I usually set them the last of May or early June, growing them in 4-inch flower pots till ready to set. Then it is easy to knock them out with an undisturbed ball and they never know they have been moved. Eggplants abominate drought, and should always be planted where they can be well irrigated in dry weather.

Wherever it is practicable one of the overhead irrigation systems should be used in the garden to make sure that the crops do not suffer from lack of moisture. I will use an irrigation system in my garden. It is a wonderful advantage to be independent of the rain, and while the sprinkling pipes add to one's water rent during the summer, it pays well to use the irrigating pipes.

As the early peas show bloom throw a furrow to each side of the rows, and then as soon as the crop is gathered turn the vines all under and plant some later crop on the land. I never clean off pea vines nor bean vines, for I wish to get all the organic decay possible into the soil. Follow a seed crop with a leaf crop, such as cabbages after peas, and so on, and vice versa.

Where radishes were sown in the same rows with beets to mark the rows early, do not let them stay too long and crowd the beets too much, but get them out and thin the beets properly. The early beets like the Egyptian, will do very well thinned to 3 inches.

If you wish to grow your own onion sets the seed should be sown in broad rows very thickly, for we do not wish these to get larger than a boy's playing marble. The eastern gardener should grow his own onion sets, for those on the market are largely grown in the West, and western-grown sets do not do as well as those grown here. They will make here more thick-necked onions than our sets. My seed for sets was sown in April, but there is still time in most of our territory to make the sowing.

I sowed a row of string beans about 40 feet long at one time and as soon as these are up sow another row, and so on until August 1st, so as to keep up a constant succession. Never cultivate beans when wet, for this will favor rust and the anthracnose. Be sure in planting string beans that they are clear of the anthracnose, for this disease is carried by the seed, and this season there is such a dearth of beans for seed that there will be temptation for unscrupulous seedsmen to throw diseased seed on the market.

Here we make the last sowing of late peas the last of April, and for this sowing I use the Champion of England. But northward peas may be sown to middle of May. While we always grow some of the little extra early peas, we are always glad when the better ones come in, and there has yet been no pea better than the old Champion of England.

In the family garden it is never well to sow too many of the early radishes at once, for they will be sure to get pitiful before used up. Better sow a few seeds at a time, and keep sowing, and in late May sow some of the later summer

varieties. Then in summer also you can grow the Celestial radish, a Chinese variety which grows as stout as one's wrist or stouter, and is not only good raw, but boiled like turnips makes a better dish than turnips.

May is the month of hope for the gardener and the good gardener will not lose any time in getting things sown and planted. And then he will not slacken his efforts in the clean cultivation as the weather gets hot.

Queries Answered

Celery on Bottom Lands.—O. D. S., West Virginia, writes: "Would celery do well on very rich bottom land that overflows some years? The overflow rarely lasts more than two days."

There is no better place for celery than strong bottom land. A two-days overflow would hardly do any harm unless the rush of the water is strong enough to wash away the soil. Celery needs plenty of moisture, and the short overflow would be simply an irrigation for it. But if the celery is grown after the Baltimore bed method and the overflows come in winter after the celery is covered finally it might do harm.

Chicken Manure for Potatoes.—E. R. H., New York, writes: "Can you tell me if chicken manure applied to the potato crop is injurious to the potatoes in any way? I have been told by a 'would-be' authority that it causes scab."

As a rule, I prefer not to use animal manure on potatoes, but use commercial fertilizer liberally. Stable manure or hen manure will tend to favor the growth of the scab fungus, and this makes the potatoes unmarketable. The best plan to use the hen manure is to spread it broadcast on land intended for corn.

Several Questions.—V. E. B., Pennsylvania, writes: "How is Radish corn harvested? How is sunflower seed dried? How can you keep weevils out of beans?"

Kaffir corn should be cut and cured in shocks and then the seed heads cut and threshed like wheat. Sunflower heads should be cut when mature and spread out under cover until the husks are dry. Then the seed can be easily

shaken out. Rake out the trash and spread the seed out to dry well before putting in bulk. You may prevent many of the weevils in beans from hatching by getting some moth balls and mixing them through the beans. You cannot keep them out, for the eggs are laid in the green beans and the hatching in the beans are made by weevils hatching out.

Tomatoes from Cuttings.—S. S. T., Maryland, writes: "In a recent issue of The Practical Farmer you had an article on some of your first experiences with tomatoes, in which you told of how you secured a supply of a new variety and how you, by taking cuttings of the few plants you had, increased the number of plants several times. As I have a small number of plants of a winter-resistant variety, I would like to get enough to set out an acre. The plants are now about 2 inches tall and are still in the hotbed. Would you please explain how you secured plants from cuttings?"

The incident mentioned was of an extra fine plant noticed in a field of trophy tomatoes. Cuttings were made in the fall and carried over in the greenhouse in pots and increased during the winter from cuttings of these plants, that there were enough plants in spring to set quite a patch, so that seed could be saved without any mixture. About forty years ago the late Col. Waring, then in Rhode Island, claimed that he had succeeded in putting the Mammoth Chihuahua tomato, that was solid and crooked, into a smooth skin, and he called it the Trophy. He offered the seed at \$5 for 20 seeds. I sent the \$5 and got the seed the first of January, sowed them at once in my greenhouse, urged their growth and made cuttings from them during the winter, so that I had 120 plants in the spring. These I planted for seed and the next year planted a field of 50,000 plants, the first field of tomatoes ever planted on the eastern shore of Maryland, where now almost every farmer plants a field. Had you sowed the seed you have, in January in a greenhouse, and propagated them during the winter, you could have made plenty to plant an acre. But it is now too late to get any but the seedling plants. If these really prove blight-proof you can save seed in abundance for another season. All our modern solid-fleshed tomatoes date from the introduction of the Trophy, for before that all the smooth tomatoes were very hollow, and solid ones were very rough and crooked.



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HORTICULTURAL

Edited by C. A. McCUE

Raspberry Culture

For some reason raspberry culture has been upon the decline in the United States. A study of the statistics show that during the last twenty-five years the industry has been steadily dwindling. The reasons for this shrinkage in acreage are not plain. Undoubtedly one reason has been the ravages of certain uncontrollable diseases, such as the crown gall. However, there are undoubtedly certain other economic reasons. Probably the increase in production of other fruits and the lengthening of the season of consumption for strawberries and asparagus have had an influence upon the popularity of the raspberry.

The raspberry, especially the red varieties, deserves a better fate. This is too good a fruit to lose. Then again, it is essentially an American fruit in its origin.

There are three types of red raspberries. The American red, European red and the Purple canes. The European is seldom grown in the United States, and one might well say never on a commercial scale. The Purple canes are supposed to be hybrids between the American red and the American black.

The raspberry is not partial to any particular soil type. The chief essentials of a good soil for this fruit being that it shall be well drained and retentive of moisture. Loam soils of a slightly sandy nature appear to give best results. The land should not be overly rich in plant food, especially in nitrogen, as soils rich in nitrogen are liable to overstimulate the growth of canes and produce soft canes which easily winter-kill. Moist, rich bottom lands are undesirable for this reason. Stiff clay soils are unfavorable to the proper growth of most varieties. The raspberry quickly suffers from an excess of moisture in the soil, and as quickly succumbs to the effects of drought. There are also certain soil preferences shown by certain varieties. Naturally weak growing sorts will succeed best on rather rich lands, while the vigorous growing kinds like Cuthbert will do best on soils of moderate fertility. The raspberry succeeds best on cool sites; hence the advisability of choosing northern exposures. Southern exposures are liable to suffer from drought.

PROPAGATION.

The American red raspberry suckers freely, and the difficulty is to keep the suckers under control. Too many suckers, allowed to grow, will quickly destroy the value of a plantation. Deep cultivation that cuts the roots will increase the number of root cuttings. In lifting suckers for nursery or plantation purposes, be careful to thrust the digging tool well under the plant, so as not to destroy the root system. The plants should never be allowed to dry out before planting. When the tissues of the root once become dry it rarely survives.

The red raspberry will do better if set upon soils that have previously been planted to some hoed crop. Sod lands are often difficult to manage during the first year of the plantation. Planting of a hoed crop the year previous is a great help in keeping weeds, grass and cutworms under control. The land should be plowed deep, say from 8 to 9 inches, and put into excellent condition before the plants are set.

Red raspberries may be planted either in fall, spring or early summer. For spring and fall planting one-year-old plants are used. For early summer

planting one should use suckers from 4 to 6 inches high. These suckers are taken direct from the old plantation; they usually do as well as one-year-old plants, and many growers prefer to use them.

The plants may be set either in the hill or row system. If the row system is used the weaker growing sorts are set 6 feet between rows and the plants 3 feet apart in the row; the stronger growing sorts, especially the Purple canes, should be set in rows 8 feet apart. One difficulty met with in row planting is that the plants can be worked only one way, and it is difficult to keep surplus suckers down; for this reason some growers prefer to use the hill system, planting in hills from 5 to 6 feet apart each way. This allows cross cultivation and makes it easier to keep the new canes confined to the hills. A raspberry plantation should bear the second year of its growth from planting.

Very little is known regarding the sterility of raspberry varieties. However, it is common practice to plant more than one variety in the plantation. Some varieties prove worthless when planted alone. The Cuthbert is a good pollinizer for other varieties.

It is seldom advisable to plant intercrops in the raspberry plantation; early peas, late tomatoes, cowpeas or soy beans, however, might be used to advantage the first year; strawberries should never be used for this purpose.

Tillage of red raspberries should not only keep the soil in a loose, friable condition, destroy weeds and conserve moisture; but it should also destroy all suckers that are out of place. It is, therefore, good practice to use a cultivator with square teeth rather than pointed. Often a knife attachment made to run just under the surface of the soil is used. Tillage should continue until the fruit is ripe. On some soils, however, it will be found best not to cultivate during the greatest profusion of bloom. In most localities cultivation can be kept up until fall, but if the canes have a tendency to winter-kill, or there is an excessive growth of wood, a cover crop should be sown the latter part of August.

PRUNING.

Pruning the red raspberry involves two distinct operations: 1. Removal of the old canes. 2. The treatment of young canes that are to bear the following year. Raspberries grow upon the one-year-old canes, and after the cane has fruited it dies the following fall and is no longer of any use to the plant. As soon as fruiting is over these bearing canes may be removed. At the same time remove all superfluous shoots of the season's growth, leaving from 4 to 7 good, healthy shoots to each hill.

In the treatment of the remaining shoots it is a question as to whether they should be pinched back or not. Some growers have followed the practice of pinching off the growing canes at a height of 3 feet—the purpose being to make a bushy plant with plenty of lateral shoots, thus increasing the fruiting area. Such treatment often throws the surplus energies of the plant into the formation and growth of suckers, and thus defeats the object of the pinching back. If later branches are formed they are often weak and had better have been left dormant until the following spring. The summer pinching of shoots is but little practiced, except upon some vigorous, rampant growing variety that would grow to an excessive height. On

rich soils the Cuthbert will often stand pinching back during the summer.

A better practice is to let the shoots grow at will during the summer and then the following spring cut back the top of the canes to about 3 feet in height. This spring pruning forces into growth the dormant buds along the length of the cane and gives a great number of lateral shoots, thus greatly increasing the bearing area.

An exception to this method is found in certain varieties that during the first few years of the plantation produce long, slender shoots of rather low vitality. Summer pinching back will tend to strengthen the root system and increase the vigor of the plant. Do the pinching back when the shoots are from 8 to 16 inches high. It is not wise to continue this treatment for more than two years.

It is not often necessary to trellis red raspberries, and it is seldom done in commercial plantations. Mulching aids to conserve moisture and produces a superior berry. However, it is seldom practiced on a field scale. Mulching keeps down weeds, conserves moisture, does away with cultivating and tends to limit the growth of suckers.

But little is known regarding fertilizers for red raspberries. If commercial fertilizers are used, one might suggest 300 to 600 pounds per acre of a 2-5-10 fertilizer. This may be strengthened with 100 pounds of nitrate of soda per acre each spring. Barnyard manure used judiciously and intelligently, is the best of fertilizers.

A plantation seldom proves profitable for more than four or five crops. The average yield should be 60-65 bushels per acre, and the profits about \$65 per acre.

Timely Suggestions for Fighting Peach Tree Borers

Patience and persistence are necessary to combat peach tree borers. They should be extracted with the aid of a strong, sharp knife and pliable wire. Trees should be examined for these pests twice a year, preferably in October and May. After the latter examination a protective covering should be applied to reduce so far as possible the entrance of new borers. Observations at the Pennsylvania State College School of Agriculture show that for this purpose lime-sulphur solution is as safe and effective a material as any. It should be applied either with a coarse spray nozzle or with a brush, and the trunk of the tree should be thoroughly covered from the exposed crown to a height of 15 inches or more.

A little lime-sulphur sediment or some extra lime may be added. Eight or ten pounds of either material is enough for 50 gallons of solution. Arsenicals are not recommended for this purpose, as some of them have proved injurious to trees and useless against the borer.

When the coating is dry, soil should be replaced around the trees and mounded up to a height of about 6 inches, so that borers gaining entrance in spite of the coating may be detected readily. The first eggs are laid by the adult moths about the middle of June. The first application of lime-sulphur should be made prior to that date. Two additional applications should follow, one early in July and the other about the middle of August. The mounds should not be disturbed at the last two applications.

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POULTRY

Edited by F. V. L. TURNER

All letters, inquiries and requests in reference to poultry, should be addressed to the Poultry Editor of The Practical Farmer, Philadelphia, Pa.

Practical Poultry Talks

The Road to Poultry Success

Since the world began, two nowadays familiar expressions have influenced mankind, either with or against his will, "like begets like," and "like father like son."

In the darkest of dark ages a Chinaman was always a Chinaman, and his son was like him, a Chinaman. The Negritos of Oceania were always black, and black they will always remain until an admixture of other blood takes place.

It is so with poultry—a Black Langshan (the stately black poultry knight from the Langshan Hills of northern China) is what he is until we disgrace his ancestral glory with alien blood.

It is so with other breeds of poultry, the Cochins and the feathered warriors from the land of the mysterious Hindu. Let it be said now that no more complete proof of "like begetting like" can be had in poultry breeding than the transmission of the "fight" qualities and characteristics of the Indian Game, he of battling lineage dating back to Buddha. So it should be with our present day fowl—every breed (so-called), every variety, possesses in its make-up the ancient, maybe, or modern, as it may be made, latent ability to transmit, under proper conditions, all of the egg laying ability or propensity of any one of its ancestry of yesterday or a million years ago.

How to bring about its realization or materialization depends, not upon the fowl, but upon the fowl's owner, for any race of fowl may be transformed into egg layers of the highest type.

The crowning glory of effort is achievement of success. To achieve success we must know the road, and the road to poultry success is now well made, straight and easy to travel, and its way lies over levels, not hills.

First Aid in the Poultry Yard

By A. J. BRADLEY

One of the first things which the beginner in the poultry business learns, frequently to his sorrow, is the tendency of the fowls to droop and die from one or more causes. The writer has vivid recollections of the old Dominicker hens that grandmother used to raise out on the "home place," and which were so healthy that the only deaths they ever met came either from old age or the business end of an ax. The highly bred fowls of the present day have none of their characteristics, apparently, and the mortality rate of the average poultry plant is something frightful to think of.

About the most painful memories I have of the first two years I spent on a poultry plant were those concerning the untimely deaths of the old and frequently the young feathered boarders, for they were nothing more in those days. The death rate among the young chicks was enough to drive any one to despair, in spite of the elaborate precautions I had taken to raise as many as possible. When the chicks, those first few seasons, began to come along for a few days or a week and then droop and die, my feelings were so tender that I hated to pick up the dead bodies. I did it gingerly at first, placing them in my pockets so that the neighbors or my wife

would not notice the high mortality among the young chicks.

I had to give up this practice when the weather grew warmer, for I frequently forgot to take the dead birds out of my pockets until the odor became so pronounced that I could not help but notice it.

It was an old saying among the farmers in the eastern section of Berks Co., in which I began my first efforts in the poultry business, that the best cure for a sick hen is a sharp ax. This diagnosis may be all right for some farmers, and from the specimens which I have seen of their raising, I would agree that the ax would not be out of place on their fowls at any time, sick or well.

There is no question that a flock of sickly fowls is a constant source of vexation, waste of time and downright loss, but if prompt and simple remedies are resorted to in the early stages of illness a halt may be called on what may prove to be, later on, the wiping out of the entire flock. I have found out that it pays, and pays big, to administer first-aid remedies at the early stages of the outbreak. The supply of these remedies need not be an extensive one to keep on hand.

Eternal vigilance is the price of health

among the fowls in the flock. I make it a rule to observe each bird carefully and note its physical condition every day. This is not an easy matter, but if one watches the birds at feeding time it is rare that an ailing fowl cannot be detected. Another method which I have never known to fail is to show your flock to visitors. Then the sick birds seem eager to show all the symptoms possible for the edification of the sightseers, and insist on occupying the center of attention.

Roup is the worst disease which the poultryman is called upon to fight and the most insidious and disagreeable. When roup develops it is best to isolate all affected birds at once, and clean and disinfect the quarters they occupied and the drinking fountains. The symptoms of roup are a sticky discharge from the eyes, nostrils and mouth and a yellow, thickish matter sometimes obstructs the windpipe or causes the head to swell to twice its natural size, accompanied by an offensive odor. Roup is similar to diphtheria in children, and precautions for disinfecting cannot be too quickly taken. A roup remedy which may be secured from any of the supply houses should always be on hand for use in this disease.

Tincture of aconite is an excellent remedy for the relief of colds, catarrh and in lessening fever. About five drops is the usual dose for a bird.

Quinine also is a good standby of the poultryman and will work wonders with colds, chicken pox and diseases originating in run-down systems. Combined with iron and strychnine tablets it makes an excellent tonic for birds that have that tired feeling. I have also used it with good effect on the hired man when he had the same symptoms and insisted on buying "Doctor Somebody's Sarsaparilla" at \$1 a bottle.

Epsom or Rochelle salts are also useful for the poultryman to have on hand. They are both splendid laxatives and will correct liver troubles and relieve diarrhea. Half a teaspoonful is the right dose. In administering salts to a large flock, they may be given with the mash, taking care that the fowls are hungry enough to eat all the mash up clean.

Calomel is another good remedy for liver troubles, and a strong laxative. From a quarter of a grain to one grain is the proper dose. Common baking soda will relieve a sour or distended crop or indigestion. As much as may be taken up on a dime is the correct dose for a sick bird.

Bismuth nitrate will often cure serious intestinal disorders, such as diarrhea and enteritis, and should be given in one grain doses. Spirits of camphor is another good remedy for the relief of diarrhea. Add a few drops to the drinking water.

Carbolated vaseline should always be kept on hand for use in anointing sores and wounds and for chicken pox, scaly leg and frozen comb. Coal tar or carbolic acid mixed with two-thirds glycerine is also recommended for scaly leg. Cover the affected shanks with the coal tar and allow it to remain until it wears off. The scales will come off with the tar.

Spirits of turpentine and sweet oil will usually relieve any bronchial affection, such as rattling or bubbling in the throat. One part turpentine to five parts sweet oil is the right dose. Give about 10 drops a day to the ailing bird.

A good disinfectant, preferably one of the coal tar products, should be included in the medicine chest of every poultryman and should be used freely as a spray whenever an infectious disease breaks out.

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antiseptic and disinfecting purposes, and should be used in the drinking water. It will prevent the spread of colds, coughs, bronchitis and other maladies in the early spring months.

Bronchitis is frequently caused by exposure to sudden changes in temperature, damp quarters and bad ventilation of the poultry house, which does not permit the moisture, caused by the breathing of many chickens at night, to pass off. The symptoms are dullness, loss of appetite, coughing, accompanied by a whistling sound in the throat. This is merely an inflammation of the breathing tubes and may be successfully treated in large flocks. If only a few birds are affected, it is best to isolate them and administer the turpentine remedy.

Enteritis is caused by irritant poisons or bacteria, which develop an inflammation of the mucous membrane of the intestines. The fowls lose their appetites, combs turn pale, feathers grow rough and the excrement is of a greenish color. The ailment is fatal if allowed to reach an advanced stage. Administer bismuth nitrate and olive oil and keep the affected birds isolated. Clean up the premises, to get rid of the cause of the trouble and disinfect all drinking utensils. This disease can create havoc with even the strongest, healthiest flocks. Pennsylvania.

A New Poultry Book for Young People and Beginners

Twenty Lessons on Poultry, by C. T. Patterson, edited by Frank E. Hering, (J. B. Lippincott Company, Philadelphia, 50c, net.)

This interesting and instructive little book of 92 pages with 56 illustrations, is prepared under the direction of the American Poultry Association, and is designed for use in schools and as a guide to beginners in poultry farming. Quoting the preface of the work: "The American Poultry Association is anxious that the boys and girls of America be given some correct and definite knowledge concerning poultry raising before they start on their life's work. Because so many children leave school about the time they complete their elementary course, this book has been prepared especially for the use of the seventh and eighth grades. It is intended to be studied in connection with the subject of practical agriculture."

While we can readily understand its value in school work, and heartily recommend it for that purpose, we also believe that many "grown-ups" will find this little book a splendid ground work in the elements of poultry raising on the farm which will prove the foundation of better results and more profit from their small, but growing, flocks. While chickens receive the most attention, there is also a chapter on turkeys, ducks and geese.

What We Are Asked

Culling.—O. M. S., Pennsylvania, writes: "How close shall I cull my flock of youngsters?"

Cull as closely as will give you nothing but strong chicks. Every weakling is a detriment to any flock, and can never be worth any more at maturity than it was as a youngster. Put your scrawny, weak pullets in one crate, the young cockerels in another, but always put the best of each in separate crates when shipping. A difference in price will result, but the good shipped to market with the poor will bring only poor prices.

Leg Weakness.—"Chicks go down on their legs without any apparent cause; what is the trouble and the remedy?"

The Agricultural Department of Pennsylvania has recently issued a statement to the effect that the present season has been the worst in several years in the prevalence of leg weakness. Nearly every section has had more or less trouble in this direction because of the exceptionally bad weather. Sunlight and ground are the surest preventives of this troublesome (and at times disastrous) disease; the English method is artificial light from roosting time to

midnight. The nearest remedy, in our experience, for those chicks affected is a reduction in the quantity of the more fattening portion of the ration (corn meal, middlings or gluten) and a heaping full teaspoon of common baking soda, mixed with the dry or moist mash, for every 25 4-weeks-old chicks, fed every other day. Keep the chicks out of doors, if the weather is not too severe (rainy, damp or raw), furnish a liberal supply of green food and do not allow too much bottom or floor heat. A teaspoon level full of Epsom salts on the first day of the soda treatment, mixed along with the same prepared soda dose, will help considerably. At the same time that this leg weakness preventive treatment is going on, watch out for the ravages of lice; the chicks are weakened, naturally, and lice will do the rest of the damage. Dust well with a good insect powder once a week, putting some around the hover, in the litter.

Preserving Eggs.—S. J. P., Virginia, writes: "Kindly give me plain directions for preserving eggs in water-glass. The quantity to use and the kind of receptacles they should be packed in, etc. Most of the articles I have read on the subject suggest stone crocks. Would not tin or wooden ware do as well?"

Butter tubs, or an old boiler, will answer the purpose just as well as a stone crock. The usual mixture is a 10 per cent solution, 1 pound of water-glass and 9 pounds of water, or 1 quart of water-glass and 9 quarts of water. Ten quarts of this solution in an old wash boiler will cover about 15 to 20 dozen eggs. (For further information on this subject see article, "Spring Eggs at Fall Prices," on page 142 of our issue of April 1, 1916.)

Worth While Suggestions

Don't think for a moment that because the youngsters were hatched in an incubator, reared in a brand new brooder and are going to live in a new house that there will be no lice nor mites. You will know differently later on, unless insecticides and germicides get a shot at what is coming.

The Egyptians greased the heads of the chicks five thousand years ago. Solomon said: "There is nothing new under the sun." He was right about this head greasing business, anyway, because there has been nothing to successfully take its place. What for? Lice, of course.

Just because there has not been such a thoroughly poor season for hatching in a good many years is no reason for disgust for poultry in general, or discouragement—both chickens and eggs are going to be scarce next fall, winter and spring, and some one, somewhere in these United States, is going to pay the price created by a big demand.

One old favorite hen consented, in the usual way to cover thirteen eggs, and very promptly died at the end of two weeks. Fortunately, our turkey hen was willing to take her place and is now caring for eleven White Leghorn chicks. Another favorite, after eighteen days raised the suffrage banner and quit. This sitting is hopelessly ruined. Now these two sittings cost us \$10 in real money; what is the answer, would it have been better and safer to have awaited the pleasure of the turkey hen, or to have borrowed back our 25-egg incubator we loaned a neighbor?

We are under the impression that we should own two incubators while we have neighbors, or lend the neighbors our favorite hens and let the aforesaid neighbors play favorites.

Our incubator legs are going into a concrete foundation, so that it cannot be loaned.

We have urged every reader to purchase an incubator because of their certainty and economy; please let us remind ourselves of this same urging—we are going to buy another, because, after writing the last paragraph we have come to the conclusion that after a while our neighbor may need two. We are not going to build a concrete foundation.

BUILDING AIDS



No matter what kind of improvement you are planning, you should have the helpful suggestions contained in our books, folders and blue-prints on building with concrete—the everlasting way. Your architect will advise concrete because he knows that this modern building material looks well, lasts longest, costs least in the long run and is absolutely fireproof and weatherproof.

ALPHA THE GUARANTEED PORTLAND CEMENT

makes concrete that is as enduring as solid rock. It always gives excellent results in any kind of concrete work.

ALPHA is made under the supervision of chemists who test hourly to make sure that every pound is pure, live and active. No cement lacking binding power can leave an ALPHA plant. ALPHA is guaranteed always to meet the U. S. Government standard for strength.

Check below the kind of construction in which you are interested. Write your name and address in the margin and mail today. We will send free data that will be of great assistance to you. Tear this out now before you turn the page.

- | | | |
|-------------------------------------|---|-------------------------------------|
| ☐ Garage | ☐ Silo | ☐ Steps |
| ☐ Driveway | ☐ Poultry House | ☐ Porch |
| ☐ Culvert | ☐ Corn Crib | ☐ Milk House |
| ☐ House | ☐ Storage Cellar | ☐ Ice House |
| ☐ Foundation | ☐ Dam | ☐ Manure Pit |
| ☐ Barn | ☐ Green House | |

Department E

ALPHA PORTLAND CEMENT CO.

General Offices: Easton, Pa.

Sales Offices: New York, Boston, Philadelphia, Pittsburgh, Baltimore, Savannah

Automatic Ventilator

in the Brooder and Colony Houses

The "Ideal" Ventilator, automatic in operation, requires no attention. Opens and closes whenever the temperature needs adjusting; noon or midnight. Prevents over-heating and avoids chilling draughts from open windows. Eliminating brooder troubles, makes more healthy chicks. Prevents crowding. Adapted for every type of poultry house or any brooding system. Releases the foul air in Barns, Stables, Garages, etc. Price \$4.50, delivered anywhere in the United States. Satisfaction guaranteed or money refunded. Write for particulars.

LIBERTY STOVE COMPANY 100 S. Third St. PHILADELPHIA, PA.

Baby Chicks
S. C. Red and W. Leghorn—The Quality and Prices of our Baby Chicks, 100 per 100, delivered anywhere in the U. S. Our Illustrated Catalog containing Ideal Guarantee is Post Free. Just Poultry Farm, Dept. 2, Southampton, N. Y.

Buttercups—Eggs from Pens
headed by the Blue Ribbon winners, \$3.00 per 15, all clear eggs replaced. Buy the kind that produce heavy layers, and blue ribbon winners. Order from this ad. Harry Lantz, Lafayette, New Jersey.

TRAP NESTED BARRED ROCKS
Pullets from heavy laying strain at reasonable prices. Vigorous, farm raised, free range stock.
G. A. Williams, Box 324, Warwick, N. Y.

Buttercups, Alvin Strain
from heavy laying 200 to 300 eggs yearly. Stock \$2.00 up; eggs \$1.50 up per 15.
CARL F. SAHLER, HARRINGTON, N. J.

EGGS FOR HATCHING from White Leghorns of the Vire Saxon Strain. Greatest layers of large White Eggs, \$5.00 per 100.
T. W. VARE, HAMMONTON, N. J.

Eggs—90% Fertile—Eggs White, Brown, Buff, Leg, and Minoras, 15 eggs, 75c; 100, \$3.95. Satisfaction guaranteed. C. free. D. W. Gooding, Box 35, Richmond, Pa.

FOR SALE: Pairs, trios, pens, all varieties. Rocks, Red, White, Buff, Leghorns, Orpingtons, Andalusians, Campines, Hamburgs, turkeys, ducks, and geese. Prices low. RALPH H. HARRY, R. 6, Millersburg, O.

Try Buttercups The women's favorite fowl. The future. Free circular. Get posted. I. F. Tillinghast, Mgr., American Buttercup Farm, Factoryville, Pa.

EGGS Black and White Langshans, Light Brahmas, B. P. Rocks, M. P. Rocks, White African guineas, \$1.25 per 15 prepaid.
M. H. MYERS, Edmon, Virginia.

Day Old Chicks For Sale Cheap 11 varieties. Per week. Better hatched than ever. Circular free. Old Homestead Hatchery, Dept. F, New Washington, O.

Baby Chicks and Eggs
S. C. White Leghorns, Young and Barron strains. Fine stock and great layers; none better. Eggs, \$1.25, 15c, 100c. Chicks, \$2 dozen, \$12, 100; delivery guaranteed.

J. S. HAUPT FARM, EASTON, PA.
Single Comb White Leghorns
Baby chicks, \$10.00 per 100. Hatching eggs, \$10.00 per 100. Write for circular. Chesterbrook Farm, Berwyn, Pa.

Imperial Pekin Ducks
Baby ducks \$10.00 per 100. Hatching eggs, \$10.00 per 100. Write for circular. Chesterbrook Farm, Berwyn, Pa.

None Better, S. C. White Leghorns
Combination of the best Leghorn qualities. Eggs and chicks in any quantities at prices that are reasonable. Get our big 60-page catalogue.

SUMMIT POULTRY FARM, RIDGELY, MD.
Chicks That Live, \$15.00 per 100
"Tiffany's Superior," Silver Laced, White and Partridge Wyandottes, Pekin, Rouen and Runner Ducks. 100 for \$15.00. Seventy-five per cent fertility guaranteed.

ALDRAM POULTRY FARM, R. 29, Phoenixville, Pa.
High Class S. C. White Leghorns
Pena headed by Tom Barron males that were raised from record laying hens. Eggs, 15 for \$1.00; 30 for \$1.75; 100 for \$5.00. Seventy-five per cent fertility guaranteed.

Walter Jones, R. D. 2, Freeport, Ohio.
"Perfection" Barred Rocks (Hingetons) Eggs 15c per setting; 4 settings \$1.00. Utility eggs from same blood, \$1.50 per setting; 8 per \$1.00; 4 per \$1.50. Now booking orders for eggs and baby chicks.

DR. HAYMAN, Box 20, Doylestown, Pa.
50 BUFF LEGHORN COCKERELS OF MY best laying strain. 25 Danish White Leghorn cockerels, fine, large, vigorous birds. My pullets lay 70%.

EGGS that hatch from Runner Ducks, \$1.50, 15c. Bronze Turkeys, 4 lb. Tom, 20 lb. Hens, 35c each. White Leghorns, 28 Egg Trap Nested, \$5.00, 100. Houdans \$1.50, 15c. Prompt shipment. Satisfaction guaranteed. Nottside Farm, Cartersville, Va.

Are you interested in Buttercups? "The Coming Breed?" For reliable information of the breed, its breeders, and bona-fide Club Members, address, Secretary AMERICAN BUTTERCUP CLUB, CLATER, PENNA.



OUR EXPERIENCE POOL

All our readers are invited to contribute their experiences on the topics under discussion. \$2.00 will be paid for the best, and \$1.00 for the next best contribution, and 50c for each other article published. Contributions must be in our hands 15 days before date of issue.

Topic No. 1196, JUNE 1.—To What Extent Have You Consulted Your State Experiment Station and County Agricultural Agent in Your Farming, and With What Success as to Practical Results? This Pool is Calculated to Show Whether or not the Work Being Done by These Public Agencies is Practical in the Experience of our Readers. Knock or Boost as You Like, but do so Only from Your Personal Experience, and not from Hearsay, and Give Reason for Your Opinion. Above all, be brief.

Topic No. 1197, JUNE 15.—Do you keep accurate farm accounts—Income, expenditures, inventory, etc.—and what have you accomplished thereby? Outline (briefly) your system.

Topic No. 1198, JULY 1.—We want your experience with strawberries; have you found them a profitable crop and to what extent? Give your acreage, varieties grown and any special care which has proved effective. Manuscripts limited to 250 words—if you can tell your story in less, so much the better.

Topic No. 1195.—The Farmer and the Automobile. Tell Your Experience with the Automobile, not as a Pleasure Vehicle, but as a Useful Servant on the Farm. H. C. McC., Asheville, N. Y.—We consider that a good car just about doubles any farmer's efficiency; indeed, the man without one can hardly compete at all with his neighbor who has one. Even the man who can afford plenty of driving horses is at a great disadvantage because he can ill afford the time to drive them. The farmer's busy season fortunately coincides exactly with the auto season in the country, and very possibly when he is planting his corn, all conditions being just right, some part of his corn planter may break; while he drives to town for necessary repairs a storm comes up, his ground must be refitted and the delay becomes a very expensive one, whereas, with the car so short a time is required to supply the missing article that the crop work is but slightly retarded.

In this section many farmers call the time spent at auction sales very profitably employed, but the long drive often required is prohibitive in the busy season; hence the bargain is lost, which with the car might easily have been secured. It is the same with good sales of any kind in the neighboring towns—the same bargain that would be well worth while picked up after supper while the horses rest, ceases to be a bargain at all if it costs a whole "day off." A man with a car can work his team all day, motor to town after supper for any needed supplies, and return without detracting either from his day's work or his night's rest. In short, the uses of the efficiency end of the automobile are practically unlimited. The farm family can meet friends at the station, find best markets to contract produce, transact legal business, take injured people to the doctor, reach their neighbor's fire or other call of sudden distress or danger, vote expeditiously at rush seasons, capture marauders of various kinds, and attend to a thousand and one other things that make for real success and that could not otherwise be done at all, or would require a team when a team could hardly be spared. The farmer of today who willingly ignores so manifestly utilitarian an article is deliberately choosing helplessness rather than efficiency.

J. C. W., Homer, N. Y.—I have found the automobile a very useful servant on the farm, especially if anything is wanted in a hurry. In a piece of machinery is broken, or grass seed or feed is needed, a trip to town can be quickly made and the tired horses can rest. I have seen farmers' autos go by with a small load of lumber. If one has small fruits, eggs or poultry to deliver the auto comes in handy. Have taken fowls to the station to ship, and have even carried young calves in my old car several times by putting an old blanket in the bottom. I used to buy them to fatten.

At one time we had a surplus of strawberries, so during the day the women folks would pick them, then after supper all four of us would go for a joy ride combined with business, selling the berries very readily to neighbors who had none—sometimes selling half a bushel at one place.

The usefulness of the automobile cannot be overestimated in cases of sickness, accident or fire, where help is needed quickly. I was phoned to one even-

ing to go to a neighbor's a mile away, as the men were away and the mother had become frightened at seeing several men around the premises. I was there in a very few minutes.

If one wishes to attend the state or county fair the auto is just the thing. It saves the horses many weary hours of work and waiting in the hot sun, saves time and one always has a nice place to sit in the shade and rest.

J. A. McC., New Milford, Pa.—Last summer I got a 5-passenger 1912 model car, learned to run it and made trips to several nearby towns and the city 25 miles distant, with fruit, constantly through the summer. I made the trips in much less time than with the team, the fruit reached the buyer in much better condition, and I met the buyer direct instead of sending by express, besides avoiding handling of fruit so many times before reaching the consumer. I was delayed only a few times by heavy storms or bursting tires, and the team was busy on the farm and did not get jaded out by the extra work. Also I could get more time to work at home than if marketing with a team. I learned to keep the car in order and change and patch tires.

C. C. C., Jr., Penn Laird, Va.—Down in old Virginia we find every class of people running the automobile. When these cars came the careful farmer watched them and the buyers with interest. For a time the farmer was skeptical, thinking the whole proposition from start to finish was one of pleasure and nothing more; that the man who owned and ran the car was doing so at a dead expense. Eventually a few wealthy farmers purchased automobiles purely for pleasure, feeling that their income was sufficient to warrant the luxury. To the great surprise of many of these farmers, they found these automobiles as great labor savers and money making machines as their binders, manure spreaders, mowers and other farm machines. Today the farmers of this section are clamoring for automobiles as they have never clamored for any machine on the farm. Go to any good business farmer and he will tell you that he doesn't see how he could do without his automobile.

I know a young farmer in this section who hesitated for quite a while about buying an automobile. He is a hard working fellow and was trying hard to pay for his little farm. His farm stock consisted of two horses, two cows, a nice flock of chickens and some pigs. At last he purchased an automobile. He told me recently that he would not be without it for any reasonable amount of money, for with his machine marketing his butter, eggs and other farm products was a pleasure and soon had him back to his work instead of giving him an all day job and a very unpleasant one. Now, this man has a regular market for his butter, getting a premium on it by supplying the wants of several families in town at regular intervals, something he could not do at the distance of six miles without an automobile. In delivering butter and eggs he found that his city customers were needing many other things that he produced on his farm, which had heretofore gone to waste simply because the time and labor of getting them to market were not justified by price. Today this man is selling farm and garden products that were going to waste before he had an automobile.

Many good business farmers that really need an automobile are not buying on account of some fishy stories they have been told about the upkeep of cars by some reckless men who give an automobile the same poor care they give their binders, mowers, rakes and plows. An automobile requires the care that all other machines should have. We have farmers who leave their binders, mowers and plows out in the weather the entire year. Such farmers are continually growing about the cost of farming and the cheap material put into farm implements these days. Such a farmer will treat his automobile just as he does the rest of his farm machinery and the growth about the cost of running and keeping up an automobile.

We have farmers here who have been operating automobiles for four or five years that are still giving good service. They have been kept well sheltered when not in use, properly lubricated with a good grade of oil, washed when dirty and run on gasoline instead of whiskey. When worn out it is safe to say they will purchase other automobiles, which is pretty good evidence that the old ones were paying investments. The farmer that is debating the automobile question today should not bother his brain about the name on the radiator so much, for there are many good machines on the market. Go to the barn and take a peep at other machines you have on the farm. If they are all snugly housed from the weather, repaired before they are needed and do good work, you are a safe farmer to buy an automobile and will quite likely find it a profitable investment.

C. H. O., Osterburg, Pa.—A good car is long-lived; the main thing that does not last is the style. Many cars that started out five years ago have been sold to the second-hand dealer, who has repainted, repaired and sold them to farmers and others; many such a car has traveled thousands of miles since it discarded its full dress suit and put on its working clothes. Such a car is the kind many farmers are buying now, because they cannot afford style at high prices. Many farmers who do not have a car, say, "I don't need a car; I have so many horses and what is the use of feeding them and letting them stand in the stable while I take the car out?" Very true, but here is the other side: If this farmer had a car he could use it to go to the store, to the railroad station, to church, to take the children to school in bad weather, and then, in cars came the careful farmer watched them and the buyers with interest. For a time the farmer was skeptical, thinking the whole proposition from start to finish was one of pleasure and nothing more; that the man who owned and ran the car was doing so at a dead expense. Eventually a few wealthy farmers purchased automobiles purely for pleasure, feeling that their income was sufficient to warrant the luxury. To the great surprise of many of these farmers, they found these automobiles as great labor savers and money making machines as their binders, manure spreaders, mowers and other farm machines. Today the farmers of this section are clamoring for automobiles as they have never clamored for any machine on the farm. Go to any good business farmer and he will tell you that he doesn't see how he could do without his automobile.

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W. S. S., Deer Creek, Ill.—The automobile has become one of the farmer's foremost assistants, with its wonderful energy in saving time, labor and money. By its use we are able to market truck crops, fruit, cream, butter and eggs profitably at a distance. My machine is a money saver in bringing home supplies; I have loaded as high as 1500 lbs. of cement and feed on my car, by laying

a platform in the rear seat, without injury to motor or car. In 1914 while harvesting oats one arm of the bundle tripper broke, and it took me just 47 minutes to go to town, have a double strength arm made and get back to my work, thus saving me much time at an important moment of my harvest. With my car I have been able to attend sales of farm live stock where I have saved money and secured good stock for our farm. Recently I attached a spring wagon to the rear axle of our car and loaded it with 1500 to 1800 lbs. of live stock, which I took to market with a saving of at least two-thirds of the ordinary transportation cost.

Used Automobiles

When you buy merchandise you judge its reliability and quality from the standing of the firm from whom you purchase. The same condition exists in buying a used automobile. The ROMAN STANDS FIRST in Reliability, and every car we sell means QUALITY plus LOW PRICE.

Over 1000 cars to select from:

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1915 Buick Touring	\$510

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30 DAYS FREE TRIAL
and freight prepaid on the new "RAIDER" bicycle. Write at once for our catalog and special offer. The improved models, prices reduced. We have the catalog and special offer. You cannot afford to buy without getting our latest proposition. WRITE TODAY.

Buy a "Rider Agent" and make big money taking orders for bicycles and motorcycles. Get our literature free on a sample to introduce the new "RAIDER" bicycle. The catalog and special offer. Write quick before the sale. Address: Babbitts Pure Lye, 150 Duane Ave., Brooklyn, N. Y.

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BIRCH Car FREE to You!
You, the farmer, need a car. We'll give you a Birch Car free. Write at once for our literature. We'll show you how. Special offer now. Time is money. Write quick. Address: Babbitts Pure Lye, 150 Duane Ave., Brooklyn, N. Y.

WE WILL PAY YOU \$120.00
to distribute "Successful Farming" in your locality. Money making book for farmers. Write at once for our new literature plan. 60 days' work or less. No money required.

On Account of Moving West I will sacrifice entire flock of Fawn and White Indian Runner ducks. Heaviest layers of pure white eggs. While they last. Write quick. Address: Babbitts Pure Lye, 150 Duane Ave., Brooklyn, N. Y.

Our Barter Column

This column is for our subscribers only—no Real Estate Agents, Dealers or Manufacturers. 2 cents per word; no advertisement less than 50 cents.

\$1000 buys my 40 acre farm, 6 room dwelling, all good soil, good water. My husband is blind, cause of selling. Mary C. Kinkinger, R. 1, North East, Md.
Pedigreed Duroc Jersey pigs, two months old. Champion Collier pure bred. Grown females. 8-week Leshorn pullets. Hatched Young strain, 60 cents. ALTA VISTA FARM, Darlington, Md.

1000 USED CARS

Come Direct to Us—Save Time and Money
FORD touring cars and roadsters: \$125 to \$275. 1916 CHEVROLET touring: run 1200 miles as OVERLAND touring car; overhauled and re-painted: \$230. 1916 MITCHELL touring car; seven-passenger; all factory equipment: \$330. HUDSON touring car; thoroughly overhauled: \$350. 1916 HUPMOBILE touring; equipped with two tops: \$700. AMERICAN touring car; demountable rims; electric lights: \$400. 1916 "D-45" Buick touring; only slightly used. HUPMOBILE roadster; all covers: \$400.

Write for Our May 15th List of 1000 Bargains.

GORSON'S AUTOMOBILE EXCHANGE, 238-240 North Broad Street Philadelphia

Largest Dealers in America. Live Agents Wanted.

The Women's Exchange

This is the farm women's own department—for them and by them. It is devoted to the discussion of topics of everyday interest to the women of the farm family. The Practical Farmer invites—and expects—you not only to write your experiences on the topics under discussion but also to propose topics for future discussions. The best letter published herein each issue will be awarded a prize of one dollar, and for each other letter published we will pay fifty cents. Address: WOMEN'S DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

JUNE 1.—We are Told That we Eat too Much Meat, and Besides, Fresh Meat is an Expensive Part of the Daily Menu. Give the Receipt of Your Favorite Substitute for Meat on Your Home Table, and Method of Serving It. We Want Only One Receipt from Each Contributor and That Should be Told as Briefly, but completely as Possible. Every Farm Woman has Some Way of Meeting This Vexing Problem, but Will Doubtless be Glad to Add to Her Variety from the Receipts of Her Sister Farmwives. Hence This Exchange Topic.

JUNE 15.—Summer Beverages. We are coming to the hot, thirsty days of the year, and we are told not to drink too much water during the hot spells; what is your best harmless thirst-quencher for the children and the men on the farm? Give one receipt only—your very best—but tell just how you prepare and serve it.

JULY 1.—The cherry season is approaching. Tell us what you do with cherries other than plain canning; give just one receipt, ribbon brief, but as complete as possible. What we want is something new in the way of a toothsome cherry product.

All contributions to the Exchange must reach us at least 15 days before the date of issue in which the topic is to be discussed.

Cooking Utensils.—Have You Found Aluminum Utensils Superior to Enamel and Why? What Novel Cooking Utensils Have You Found Peculiarly Convenient and How?

Mrs. C. B. A., Atwater, O.—Our experience with aluminum ware dates back 23 years last January, when we purchased our first kettle. As we were anxious to try it out, we used it every time a kettle was needed for cooking. It is in excellent condition yet. We have added piece by piece until our cooking outfit is almost entirely aluminum. It does not crack or scale, does not rust or burn easily, and is not ruined in case it does burn badly. The griddle needs no grease, and the best pot roast we ever ate was made in an aluminum kettle cooked entirely without water. It heats quicker than granite, and is much cheaper in the end. In case it becomes discolored, stew some rhubarb in it and leave in the kettle until cool and it is brightened beautifully. Its only enemy is alkali.

Mrs. L. H. B., Doylestown, Pa.—With regard to aluminum vessels, I find that they are far more serviceable than enamel. With the same usage aluminum ware lasts twice as long as enamel. It does not chip or crack, and can stand a greater degree of heat than enamel. Of course, enameled ware looks pretty in any kitchen, but with all the good aluminum polishes on the market now it is easy to keep aluminum in attractive condition.

As far as novel cooking utensils are concerned, there are four that I use and are so good that I must "pass them along." 1. A coffee percolator, which I would not be without, as the clear coffee it makes, and the easy method of preparing it make it a pleasure to use. 2. A potato peeler—a small instrument with a curved tin body in which there is a slit. This peeler does the work in one-quarter the time that it takes with an ordinary vegetable knife; it takes off a thinner peel and it saves the hands. The last I emphasize, for every housewife knows the deadly effect of potatoes on the fingers. 3. A triple steamer—one part set above another with a spout running through to the top. In the bottom pan soup may be cooked, or if soup is not used, water heated. In each of the others either a vegetable and meat, or two vegetables. The steam cooks them and any one can see how gas or fuel is saved with such a utensil. 4. A 10-cent asbestos plate with handle. This I place under any pan that may need watching, and thus avoid the least bit of scorching; also I frequently toast bread on an asbestos plate over a gas flame.

M. M. R., Palm, Pa.—Aluminum cooking utensils are very well liked in our kitchen. They have an attractive appearance and are light. The first cost may appear high, but when one considers the fact that they can be used for years and keep in good condition they are cheaper than many other utensils now

in use. Enamel should be discarded as soon as it begins to chip, which will occur in a short time through ordinary use, if it is dropped or knocked, or if it is subjected to too great heat. If aluminum drops it may receive a slight dent, which can be removed by pounding with a wooden mallet. If anything burns in an aluminum utensil it may be a little tedious to clean, but after it is cleaned it is as good as ever.

I have two styles of boilers. One is made with a perfectly flat bottom. It takes quite a while for anything in this boiler to heat to the boiling point. The other style has a ring pressed in the bottom about an inch from the edge, which retains the heat under the kettle. With this style I can reach the boiling point in a very short time.

I have an aluminum frying pan which I prefer to any other. It fries a beautiful brown with less danger of burning than a steel or iron pan, and no danger of the food receiving a bad flavor, as is often the case with iron or steel pans. The only trouble I have had with aluminum is that if it is heated to too high a temperature it will warp. An aluminum griddle is used quite frequently in our kitchen. It is just the thing for griddle cakes—no grease, no smoke, no odor, no indigestion. It is quite satisfactory for baking cookies, biscuits, etc. A croquette fryer is one of our indispensable utensils. It is a kettle with a wire basket to fit inside. When the croquettes, doughnuts, fritters, etc., are cooked the basket is raised out of the fat and they will drain in a very short time.

Mrs. J. W. C., Delaware.—I bought an aluminum coffee percolator, teapot, and a tiny saucepan in which I melt paraffine to seal my jelly glasses. These few articles have convinced me of the superiority of this ware. Tinware grows dingy, rusts easily and wears through quickly. Enamelware, even the best, will chip or crack in time. But aluminum wears everlastingly and keeps bright as silver with little care. It is a daily pleasure to set the shiny pots side by side, as bright as new. I think it will be a good investment to furnish my kitchen with aluminum piece by piece, and really more economical in the end, even though the first expense is greater.

I have a novel set of kettles for my oil stove, which are useful on the range when crowded for space. These are triple saucepans, wedge-shaped, each having a capacity of 2½ quarts, which, when fitted together use the space of one round kettle. Thus three different kinds of food may be cooked on one burner, the advantage of which all cooks will see.

Mrs. A. L., Martinsburg, W. Va.—In my opinion aluminum is far superior to enamel for cooking because it does not scale, things do not burn as quickly, it is easier kept clean and anything can be left to stand in it as well as in enamel. We have a fireless cooker which has the aluminum kettle and we use these almost entirely for boiling. One advantage we find in these is that the covers fit so tight, retaining the steam, and consequently the flavor. We have used them both in the cooker and on the range almost constantly for four or five years and they are still as good as new. Am afraid it would not have proved this way if they had been enamel. We particularly enjoy the aluminum muffin rings because they do not stick and are so easily washed.

Mrs. J. A. F., Sedalia, Mo.—There are several reasons why aluminum utensils are superior to enamel ones. First, if an aluminum vessel is placed on the stove and becomes too hot, there isn't anything to chip off and become mixed with the food one puts in. Like there is if one uses enamelware. Then, too, if an aluminum vessel is accidentally dropped on the floor there isn't any damage done. The aluminum vessels are a trifle more expensive in the beginning, but not when the length of time they can be used is considered. We have one stew pan in our family that is ten years old, and its

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and is not yet. In roasting, meat can be put in a closely covered aluminum vessel, without water (fire moderate, of course) and by turning often it becomes beautifully browned, with all the good juices retained. For preserving, cooking, etc., aluminum cannot be equalled. The vessels are a trifle hard to keep bright, but in summer, when one has plenty of tomatoes, the peelings and refuse ones are splendid for brightening. Just put them into the vessels, covering with water, and boil. At other times the various other cleansers the housekeeper uses will suffice. We have even used wood ashes on one 10-year-old stew pan.

Mrs. A. H., Roosevelt, Okla.—I have found aluminum utensils durable and light to handle, but hard to clean, as we use hard well water, which forms a crusty deposit on the dipper. One can, not let soapy water stand over night in aluminum cooking kettles without discoloring them. For every-day use on the farm I give enameled ware utensils the preference, as one can cook anything in them and let any eatables stand over night in them without danger of poisoning. My most useful utensil is my double boiler, or cereal cooker, of enameled bread, roasting meats, cooking vegetables for threshers, etc., and too many other uses to mention.

Clean Utensils for Milk

Bitterness in milk due to undesirable bacteria is not noticeable until milk has stood for a time, and the flavor becomes more pronounced as the milk ages. When bitter flavor is due to unfavorable bacteria the Pennsylvania State College Experiment Station recommends that all pails, pans and other utensils coming in contact with the milk be either thoroughly steamed or scalded in boiling water.

Do Something for the Birds

(Concluded from page 209)

A common tin can makes a safe nest for the smaller birds, the wrens, bluebirds, etc. Fasten one end to a post or board with nails or staples, and in the other cut an opening, using a silver quarter for a pattern. Leave uncut part of the circle, bending down the tin for a tiny porch or platform. Either paint the tin a dull, dark color, or wrap it with bark, to subdue the brightness, and it will soon be claimed. Do not forget to punch a hole for drainage.

A round board bottom from an old washing machine, which had a dozen or more large partitions in it, made a successful bird "apartment house." A good sized tin can was fastened with wire staples over each hole, on the back of the board, with wooden pegs for perches below each hole. The cans did not even have to be covered to hide the shininess, as the birds could see only the wooden front when the board was mounted, with the cans at the back, high up against an outbuilding. This promises to be an easy way of providing quarters for a martin colony.

Chalk, starch, candy or cigar boxes make suitable bird houses. Some will need to be reinforced with nails or wire, and some will need the addition of a simple slant roof. But none require more than a very little time to prepare. Openings should be made nearer the top than to the bottom, to suit the birds best.

Let us lose no time in putting up some simple houses, as every day will see new arrivals. And the busy nesting season soon follows.

The new looks may be modified by covering with bark, mosses or rustic twigs nailed on. The more we can make the houses look like a hole in a trunk or stump the better.

A shallow tray always kept filled with water for their use, will do much toward populating your premises with the birds. Birds are always more abundant near water. They are often troubled to get water, as they will not drink or bathe in running water that is too deep. But

make the tray bath safe from prowling cats, as a bird is helpless to escape when wet.

Bits of string, cloth, feathers, etc., are eagerly claimed for nest building if scattered about the orchard and garden. I have seen every feather from dressing a chicken carried away in a few hours in the height of the nesting season.

The bird houses in the sketch are, from left to right, respectively, a chalk box, a cigar box, a bark-covered tin can, and a dry yeast box. The bird, a little house wren, deserted an elegant ready-made bird home to take up her abode in this rough box nailed to the window post of the house.

For the robins and phoebes, which are not of hole-nesting habits, sheltered shelves or ledges under the eaves of outbuildings are gratefully accepted as nesting sites. A few such shelves about the premises will be the means of increasing the number of these valuable birds, to a great extent.

It is never too late to put up bird houses, as many of the birds rear second or even third families. Besides, what nests are not claimed this year will only have more time to acquire weathered tones that will insure their occupancy another season.

No one can fail to see the great value the birds are to the farmer, with their insect and weed destroying habits. Besides this, there is nothing in nature to

compare with them in interest as a study. Our work about the garden and orchard, our trips afield, are enlivened and enriched with their songs and cheery presence. Their busy, joyous human traits make them a study of never-failing fascination. Then let us not fail to include them in our scheme of life, and do all that we can to look out for their well being.

New York.

Points to Keep in Mind in Making a Fireless Cooker

1. The cooker must be well packed with non-conducting material.
2. The pails, or cooking buckets, must fit in the "nests" and have tight covers.
3. The pails and lids should be enamel, aluminum, or of non-rusting material.
4. Be sure the lid is tight.

POINTS TO KEEP IN MIND WHEN USING THE FIRELESS COOKER.

1. All food must be cooked a short time on the stove first, in the pail which fits into the "hay box" or cooker.
2. The food must be taken directly from the stove and put into the cooker.
3. If the box is opened during cooking process the pail must be re-heated.
4. Never let food cool in the cooker.
5. Keep the cooker open when not in use. Have the pails well scalded, dried and aired to prevent the box from getting a musty odor.

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7718.—Ladies' waist. Cut in sizes 36 to 44 inches bust measure. Long or short sleeves may be used and the waist may be made up in linen, crepe de chine or madras.
7644.—Children's dress. Cut in sizes 2, 4, 6 and 8 years. Body and sleeve sections are in one and the dress has an applied yoke.
7702.—Girls' dress. Cut in sizes 2, 4 and 6 years. This dress closes at the side of the front and has a 4-gored skirt.
7704.—Ladies' dress. Cut in sizes 34 to 42 inches bust measure. This garment is especially suitable for stout figures.
7746.—Ladies' apron dress. Cut in one size. This garment may be used as a dress and buttons at each shoulder.
7649.—Girls' dress. Cut in sizes 2 to 12 years. This dress has a round collar, short sleeves and may be made up in linen, serge or gabardine.
7601.—Ladies' skirt. Cut in sizes 34 to 32 inches waist measure. The skirt is cut in three gores and has inserted side sections.
7654.—Ladies' dress. Cut in sizes 36 to 42 inches bust measure. The dress has a 4-gored skirt attached to a body lining.
7296.—Ladies' skirt. Cut in sizes 22 to 36 inches waist measure. The skirt is cut in three gores and closes at the front.
7738.—Ladies' negligee. Cut in sizes 36, 40 and 44 inches bust measure. Body and sleeves are in one.

The Practical Farmer

Live Stock and Dairy Section

EDITED BY W. H. TOMHAVE

A Rotation of Hog Pastures

By HUGH FERGUS

are often used to fill in a gap caused by failure of other crops. They can be sown about May 10th and will be ready to pasture in about seven weeks. From one to one and one-half bushels of seed per acre will be required, but if broadcast, from one and one-half to two bushels. When the pods are formed and the peas or beans are in the dough stage, the hogs should be turned in to harvest the crop.

If the farmer wishes to "hog down" corn in the fall by turning in a large number of hogs to fatten for market, the corn should be planted as early as possible. The value of this crop can be great.

There are a few questions which the farmer will have to answer for himself before planning a rotation of crops. How much of my farm land can I use for hog raising? How many hogs can I conveniently handle on this land? How much time can I devote to hog raising? After these questions are thoroughly threshed out in the farmer's mind, he is ready to proceed. No fixed rule can be laid down regarding the number of hogs that can be matured on an acre. The amount of forage produced depends upon the fertility of the soil and the season. The number of hogs and the length of time that they can be pastured on a given acreage of land will depend on the amount of forage grown, the size of the hogs and the amount of grain fed in addition to the pasture.

Rape can be sown as early as the weather will permit; in fact, it can be sown any time during the growing season up until about August. The plants continue growing until heavy frosts come and wilt them. An acre of rape with some supplemental feed, such as corn 12 to 15 parts, and tankage 1 part, will carry about 20 hogs two or three months continuously. Dwarf Essex is the best variety of rape to plant. Rape will be ready to pasture when it is about 6 inches high, or when it is eight or ten weeks old. If broadcast, 5 to 8 pounds should be seeded to an acre. If the land is inclined to be weedy, the rape can be drilled and cultivated to get rid of the weeds. Rows about 20 inches apart will allow for cultivation. If the seed is drilled, 3 pounds per acre is sufficient. Such practice requires a considerable amount of additional labor.

Canadian field peas can be sown very early in the spring. The seeding should be done in April or early May. It is always a good plan to sow oats or rye with the peas, using about a bushel of oats to one and one-half bushels of peas per acre. Hogs are very thorough in harvesting and cleaning up the peas and vines. The great value of peas as a pasture crop for swine is not sufficiently recognized.

In sections where they will grow, soy beans and cowpeas are recommended very highly for use as a hog pasture. In the northern latitudes they are outclassed by longer season forages. The pasture season for soy beans and cowpeas is very short, lasting, usually, from 40 to 50 days. Soy beans and cowpeas

Sheep Benefit Land and Purse

By EARLE W. GAGE

Charles Brown, a practical western New York farmer, in speaking of his flock of sheep, says "they are a valuable asset to any farm when properly handled. They will clean up the weeds and keep them out of the fields, as well as enrich the pastures. They are helpful about the farm when it comes to cleaning fields of wild growth of bushes, weeds and grasses. After the harvest last fall, I turned the sheep into my oat, wheat, barley and rye fields and they cleaned off the weed growth caused by the heavy rains, in short order. It was good for the land, good for the sheep and the fields will show their good

think that wool-bearing animals can stand outdoor weather in winter without bad results. It is not necessary to have the quarters very warm, but is essential that they be dry and protected against severe storms. The ewes should receive special attention at lambing time, and each one put in a separate pen, if possible. Young lambs are very susceptible to cold; but if well cared for until three days old, can stand any amount of cold if kept dry. Six ewes on a neighboring farm had nine lambs last season, and all lived and were marketed at a profit. But care was given the flock.

During winter, sheep should be supplied with some succulent food. For this there is nothing cheaper than the ordinary purple top turnip. These can often be grown in the corn, or after early potatoes. Silage is also a desirable succulent feed. Two bushels for 50 sheep may be fed to advantage. Cabbage is also a desirable feed. Early cut hay—either clover or mixed grasses—will do much to provide suitable rations. Coarse timothy hay should never be fed, if other hay can be secured. Sheep love a variety. An occasional feed of corn fodder is excellent. Where beans are grown, the pods and smaller stalks make fine forage for them.

How much and what sort of grain to feed must be determined by the condition of the sheep and what one intends to do with them. If they come into winter quarters in good flesh and are not to drop their lambs until pasture, with some form of succulence and clover or alfalfa hay, no grain will be needed. If they are thin, enough grain should be fed to put them in good flesh before lambing. This will also materially increase the growth of wool. A sheep poor in flesh is always a light shearer. Success with lambs, aside from vigorous mature parent stock, depends more on a sufficient food supply of the right kind than on any other one thing. A lamb is made up of bone, blood and muscle and connective tissue. This demands mineral matter and protein in food of the mother, in order that she may supply building material in addition to the requirements of her own body and have an abundance of milk for the lamb at birth. Corn alone is not a desirable feed for breeding. When lambs are born in the winter, grain should be given the ewes at least a month before lambing time. If the sheep are thin, two months is better; beginning with one-quarter of a pound daily and gradually increasing to one-half pound per head daily. This grain may be a mixture of equal parts of corn, bran, oats and brewers' grains—or any protein by-products such as one would feed to dry cows or heifers.

Sheep should have access to fresh, pure water at all times. They also need an abundance of litter under them, with dry, well ventilated quarters, which need not be too warm. They should not be allowed to crowd through small entrances or against sharp projecting corners, as this will spoil the wool. The



Hogs Feeding on Rape Pasture

ly increased by drilling Dwarf Essex rape or cowpeas in between the rows just after the last cultivation of the corn. The combination of corn and one of the other crops just mentioned produces a wonderful growth in the hogs.

There is no kind of pasture that becomes green and suitable for hogs as early in the spring as winter rye, oats or wheat. These cereals are generally sown early in the fall previous. These crops will furnish, if planted early enough, a good pasture during the early fall and late winter and they are the first crops to furnish grazing in early spring.

Many successful farmers prefer to use alfalfa for both pasture and hay at the same time. The number of hogs generally turned into a field is so limited that the usual crop of hay is made. An acre of alfalfa hay will keep from 10 to 15 pigs, depending upon their size, during the summer, and will also produce some hay. When grain is fed in addition to alfalfa pasture the hogs will make very profitable gains.

The cost of gains produced with a forage system of feeding is much less than the cost of gains in dry lot. No greater opportunity exists for cheapening pork production than through the general adoption of a forage crop system for spring pigs.

Pennsylvania.



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feeding racks and mangers should be cleaned of any left-over feed or litter, as they will relish their feed better when none of the old roughage is left in the rack.

The ram should receive special attention at service time. It will always pay to stable him during the day with a supply of fresh water, early cut hay, with plenty of oats and a little oil meal added. This will keep up his vitality, and if he is only placed with the flock at night he will not exhaust himself, the lambs will be stronger and come more evenly, with less barren or late breeding ewes. If these small items are looked to it will insure lambs being strong and vigorous.

The reader will probably be interested in the profits that may be made with sheep. One western New York farmer keeps 24 head of grade Shropshire ewes, five or six years old, which raised 31 lambs last year. They were dropped in February and March, and on May 15th 18 were sold, averaging 65 pounds each, making a total of \$93.60. On July 2nd 12 were sold, weighing approximately 67 pounds each, for \$56. This made a total of \$150 for 30 lambs, while the best male lamb was kept for further breeding purposes. This was not all, for the ewes sheared 175 pounds of wool, which, at 25 cents per pound, brought nearly \$45, making a total income of \$195 from 24 head of sheep. This income of \$195 allowed the farmer a good price for considerable feed that might have been wasted had it not been fed to the sheep.

Sheep will pay well for the feed consumed and will make a profitable source of income on the average farm when properly handled.

New York.

Feeding and the Making of Balanced Rations

By H. H. DEAN, Author of "Canadian Dairying"

(This series started in our issue of March 1st, and an article has appeared in each succeeding issue.)

V.—Cost Consideration in Feeding

Should cost of a ration be considered? If so, to what extent? I fancy that a number of readers are ready to answer, "Of course, present cost should always be considered when making rations for cows." However, there are cases where cost does not need be, and usually is not, a factor for the cow feeder to take into account. One example is in the case of official or semi-official testing, where the chief object is to have the cow give a large flow of milk, or produce a large yield of milk fat—in other words, where the feeder desires a cow to "make," or "break," a record. Another case may be that of a valuable cow which has become "run-down" through ill-health or poor treatment. Sometimes a cow of known producing ancestry can be purchased at a reasonable or low figure, because she is thin. If the buyer be shrewd and can see a good cow in a "bag of bones" he can afford to feed this cow at a comparatively high cost in order to get her in producing condition, because he feels sure she will afterwards reward her owner for the extra feed. Another example is in the case of "dry" cows. It is a sound maxim of good feeding to give the cow plenty of nourishing feed during the period of rest, in order that the cow's storage batteries may become highly charged with blood and nervous force, which are the two essentials for large milk production when the cow freshens.

All of the world's records for milk and butter production have been made by cows that were well fed and well

cared for at the time when they were not giving milk, as well as when milking. It is a mistaken idea which some men have that cows should be put on short rations as soon as they cease to give milk. If the cow be carrying a calf and is due to freshen in six weeks or two months after drying off, she should be well fed during this time, even though the cost of the ration may look rather high at the time.

Still another case is that of feeding calves and heifers which are to be future milkers in the herd. It is an unwise policy to stint the feed on these in order to save feed, or feed bills. If they are worth rearing at all for dairy purposes they are worth the cost of all necessary feed to keep them growing and thrifty.

Bearing the foregoing limitations in mind, we should like to observe that in ordinary farm feeding practice the cost of a ration should be carefully estimated and the relation of this cost to value of milk, cream, or butter produced, should be carefully studied.

To illustrate what is meant: Suppose a ration is costing 25 cents a day; the cow receiving the ration is producing 15 pounds of milk daily, which sells, net, for \$1.60 per 100 lbs.; the value of one pound of milk is worth 1.6 cents, therefore 15 lbs. of milk are worth 24 cents. Here is an apparent loss of 1 cent a day unless the cow is being fattened and milked at the same time, which is a common practice with some suppliers of milk for city trade. They buy fresh cows, milk them as long as profitable, feed well, and when the milk flow falls below the profit line they sell to the butcher and buy more fresh cows.

Take another case: Suppose a cow is not receiving a sufficient amount of feed, chiefly lacking in concentrates, to stimulate the milk flow to its greatest production; let us assume the cow is getting 6 lbs. meal daily, together with necessary roughage and is producing 25 lbs. of milk daily; the feeder believes this cow can do better and adds 2 pounds of meal to the ration; the cow responds with an extra 5 pounds of milk daily. If the added meal cost 3 to 4 cents and the milk is worth 1.6 cents per pound, the 5 lbs. would be worth 8 cents. This looks like good business—3 or 4 cents expended on meal and 8 cents value received in the form of milk. The feeder would be encouraged to give more meal, at the same time being careful to weigh the milk at each milking. In this way the feeder learns the capacity of each cow for economical milk production.

By knowing the cost of a ration; by weighing the milk from each cow daily; and by figuring the relation of cost in feed to value of milk produced by each individual cow, the feeder is able to know where he is at. In these times of high cost of feed and labor, the dairy farmer has to figure closely, and study carefully, in order to make profit in the business.

(To be continued.)

Manure Should be Conserved

Much care should be exercised in handling manures in order to secure the greatest returns from their use.

A few suggestions are offered by the Pennsylvania State College Experiment Station for the proper conservation of manure. (1) Save all the liquid manure; (2) prevent leaching and fermentation; (3) if possible haul manure on the land as rapidly as it is made; (4) buy nitrogen in concentrated feeds rather than in commercial fertilizers; (5) reinforce the manure with a phosphate so as to make it a balanced ration for plants.

Milking Machines and the Help Problem

By WALTER JACK

We have concluded the milking machine will be the solution of our labor problem. A milking machine is far more efficient than a poor milker, and is superior to an ordinary milker. We have tried various kinds of help—we have had foreigners, city men, boys, and local young men. Not one man in five has been a good milker, and there are not enough good milkers to go around among dairymen. Every milking machine sold today has its friends. Some dairymen have discarded their machines, but since there are others who are using the machines with success, we are led to believe that it is the man and not the machine, that is at fault. On one dairy farm which I visited, in one barn three men with milking machines were milking 150 cows, and they did the work in less than an hour and a half. In other barns there were 150 cows to be milked, which required eight men and an overseer. It required a little over two hours time for these nine men to milk by hand, while one-third this number of men with one of the well known machines did the same work in two-thirds the time. I was told that when the sanitary precautions about the stables were the same, and hand milking compared with machine, the bacterial count was far lower where the machine was used. I know another place where 25 cows were milked for two years with a machine. Previous to securing the machines four milkers were employed and the milk had to be ready for delivery shortly after 5 o'clock each morning. After the installation of the machine two men did the milking, and part of the time it was done by one man. This dairyman told me that his heifers enjoyed being milked by the machine, and he was able to discard one man, whose yearly wage paid for the machine.

I know another place where a machine has been installed, and a little girl eleven years old does the work of perhaps two men the hard way. She can

place the teat cups on the cows as well as her father, and she likes to follow the machine and strip out the cows. When calves suckle the cows we always follow to be sure the cows are dry, and this is a practice which should be observed with all machines.

I know a dairyman who handles 18 cows and does his farm work besides. He says he is relieved of the help problem, and the milking machine did it. His boy about ten or eleven years old is as efficient in using the machine as is the father. One of our nearby dairymen, who has lost part of one hand, has installed a milking machine. His plan, however, is to let his son do all chores and milking, while he does field work with three and four horses with gang plow and other machinery to be handled by four horses. He is a man who has made considerable use of hired help, but now he contends that he can do more work, having the machine, and other machinery for field work, and can keep his son with him, has money in the family, and at the same time relieves the wife of the bother of hired men in the home.

The milking machine is simple, and readily understood by the average dairyman. One authority says that the milking machine is the greatest invention that has come to the aid of the dairyman since the invention of the cream separator. It is strange that the milking machine did not come before the cream separator, for it is simpler.

Some contend the milking machine should not be used unless the dairyman has 20 or more cows, but I believe that equipment would be profitable in case of a dozen cows, although I would not buy one of the more expensive machines. I am not mentioning the various kinds of machines, because I consider them all good. I believe that there is a place for the milking machine, but every dairyman must decide this matter for himself.

Lameness in Horses

J. H. REED, V. S.

(Continued from May 1st issue.)

If examining a horse for the detection of lameness, the prospective purchaser, or the veterinarian who is examining for a prospective purchaser, must be very careful, especially where any doubts exist as to the honesty of the vendor, as some horse dealers have studied the matter closely and are up to all manner of tricks to hide lameness in a horse where it is not well marked. Some forms of lameness disappear quickly as soon as the horse is put in motion, while others do not show plainly until smartly exercised. In order to, as far as possible, guard against deception, it is well to go to the horse after he has been standing quietly for a few hours, and ask him to stand over in the stall, at the same time watching the hind legs closely to observe whether he steps freely and places equal weight upon each foot. Then the groom should put a light bridle, with snaffle bit, on the horse and lead him out, or lead him with the halter, taking him out quietly and allowing a free head. There must be no holding up of the head to prevent "nodding." He should hold the rein with the hand about 18 inches from the mouth and allow it to hang rather slack. If he gives much more rein than this, a spirited or vicious animal may turn and kick him. A stretch of hard, level road should be selected, and the animal trotted on it as soon as taken out, for the

reason that a slight lameness may disappear if he be walked some distance. Some dealers will knock a horse about in the stall, or excite him in some way, before leading him out, in order to remove such lameness. Any actions of this nature upon the part of the owner or groom should be looked upon as suspicious, if not considered of sufficient importance to stay all negotiations. The examiner watches the horse walking out of the stable, hence decides whether or not he walks sound. If the animal is spirited or frisky, and has acted a little fresh, he should be petted and quieted and allowed to stand for a few minutes after reaching the street or road, and led straight away from the examiner, at a slow, easy jog; of course, with a free head. After having gone about 75 to 100 yards he should be turned slowly and jogged straight back toward the examiner. It may be necessary to do this repeatedly, the examiner watching closely when the horse is turning, in order to observe whether he shows any peculiarity, such as symptoms of stringhalt. When a horse, not laboring under excitement or nervousness, walks and jogs sound under the above conditions, the examiner is safe, in most cases, in deciding that he is not lame. If the gait be such that the examiner is not quite able to decide whether or not he is going sound, it is safer to give lameness "the benefit of the doubt" and decide that he is not sound. The horse may have shown bridle lameness, or may, though perfectly sound, have a peculiarity of



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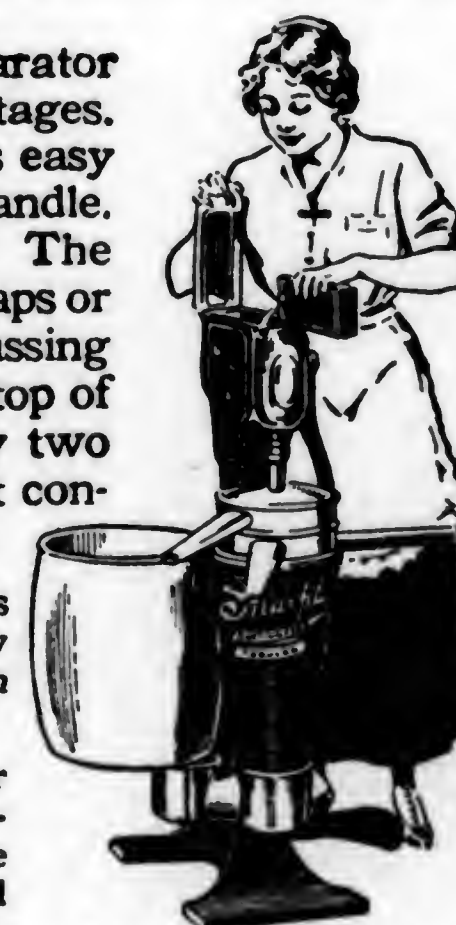
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gait that leads to the suspicion that he is lame, but such cases are rarely met with, and animals with such peculiarities are very undesirable. Hence, where any well grounded suspicion exists it is wise to take no chances. However, if the examiner cannot decide in a few times whether or not lameness exists, and he wishes to make further tests, it is better to put the horse back into the stable and allow him to stand for a few hours, as exercise in most cases has a tendency to lessen, and in some cases entirely remove the lameness. After having stood at ease for some time he may again be taken out, and, if the action still be suspicious, he should be condemned. In cases of suspected lameness, especially in front, it is good practice to put a man on the horse's back and have him jog slowly on a hard road, with a loose rein, as the weight upon the back may cause a manifestation of lameness, that without it is not quite evident. In most cases, however, this is not necessary, and if the animal be a spirited one the act may defeat its own object. The examiner is not endeavoring to locate the seat of lameness, or diagnose its character or cause. He is simply endeavoring to satisfy himself as to whether or not it exists, and if it be present he takes no trouble to ascertain its cause or nature. He simply condemns the horse as lame. In most cases where a person is unable to decide whether or not lameness exists it is safer to decide that the horse is not going sound.

In some cases lameness is manifested only after sharp work, and it is necessary to give the animal a few miles at a sharp trot, or a gallop, and then tie him in a stall until he cools off. When taken out and trotted after such a test, lameness, if present, will usually be detectable. It is only where suspicion exists that such a test is necessary, as in cases of badly formed hocks, splints near the knee, or some suspicious alteration of structure in any part of the limb, or in cases where there is pointing when at rest. The gait alone is sometimes sufficient to determine the seat of lameness, and in some cases it is the only guide; but it is a good rule, and one that should never be neglected, to examine the whole limb while the animal is at rest. By this method we discern lameness by position and negative symptoms. For example, if there be heat, pain or swelling in any part of the limb, discoverable by the eye or by manipulation, the evidence is positive that the cause is in such a part, but if, on the contrary, there be neither pain, heat nor swelling in the limb, nothing detectable in the superficial parts of the foot, to account for the lameness, we must conclude that it is deep seated in the foot, or in some part of the limb thickly covered by healthy tissue, and we must arrive at conclusions by negative symptoms, assisted by peculiarities of action.

Lameness may be caused by a strain of a ligament, tendon or muscular tissue; by fracture; diseased bone or cartilage; nerve or other tumors; plugging of arteries; accidents, as pricks in shoeing, treads, ulcers, rheumatism, etc. Lameness requires immediate attention.

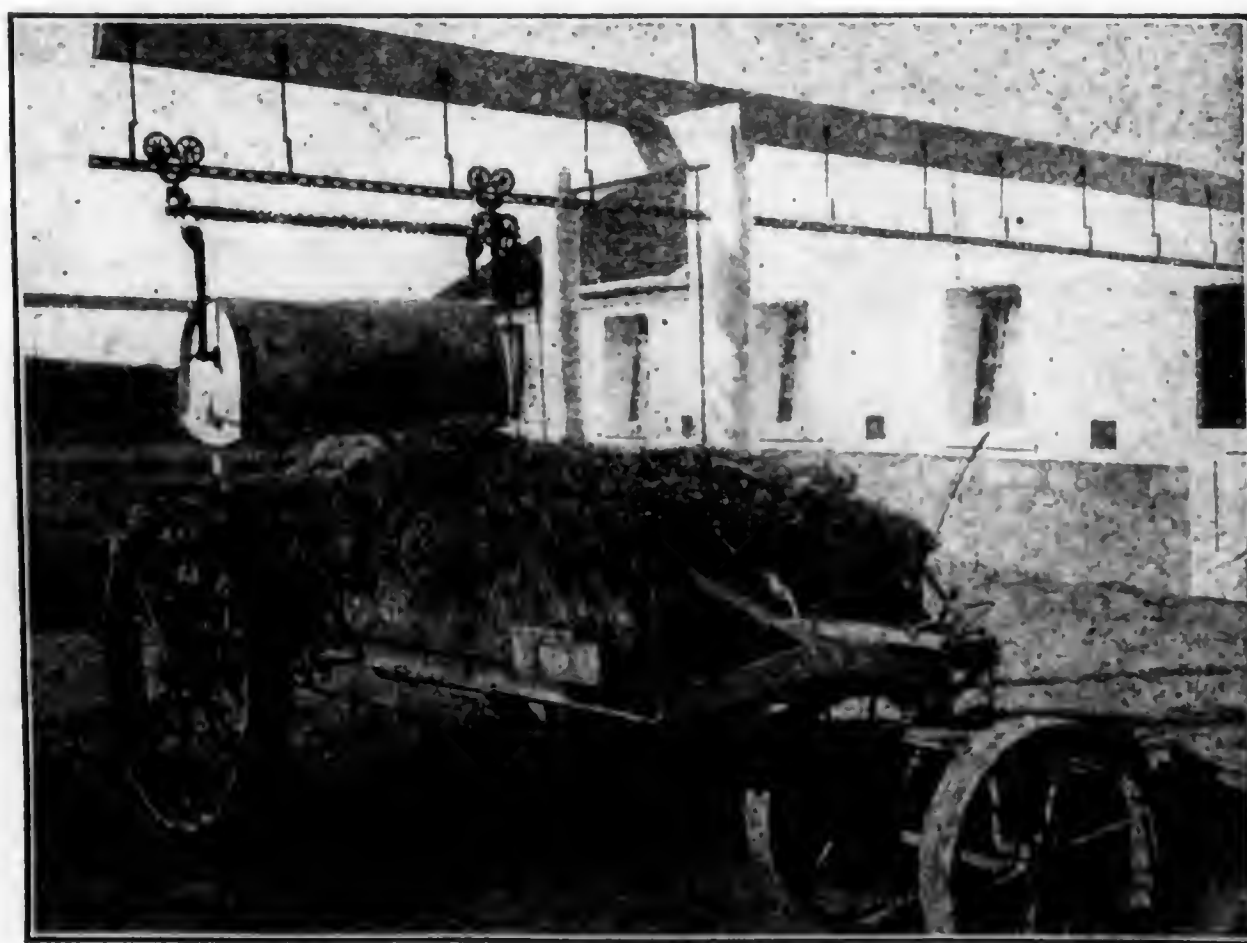
(To be continued.)

Beef Cattle in the East

By W. H. TOMHAVE

The number of beef cattle that are raised to a high state of fertility. In the eastern part of the United States each year is often underestimated. There are few extensive cattle feeders, but there are a large number of farmers who each year feed a few head, the total of which is quite an important factor in the supply of the country. As in other

There is a big field for beef production in the East if properly conducted. This form of live stock growing should not be confined to cattle feeding alone, but beef breeding herds should be established upon the farms in many localities. The East offers unusual opportuni-



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ties for beef raising because of the large amount of rough land which can be pastured to advantage and the large amount of rough feed produced for which a market must be provided. No class of animals are better suited for the utilization of such a large amount of roughage than beef cattle. Another factor of considerable importance is the proximity to desirable markets, which means the saving of freight in marketing cattle as compared to the Central West. One of the problems confronting cattle feeders all over the country at the pres-

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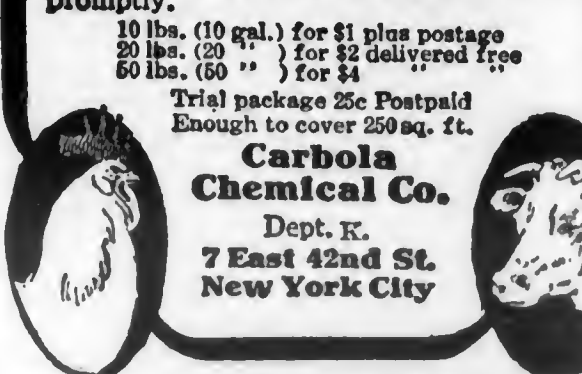
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ent time is the source of their supply of feeders. Feeding cattle are scarce and high in price. One solution to this problem is the growing of more feeding cattle on the average farm, instead of depending upon the ranges to supply the feeders. Recent experimental work with beef breeding herds shows that by using the proper type of beef animals and feeding the cows largely on roughage, such as silage and good hay, supplemented with a small amount of highly concentrated protein feed like cotton seed meal or oil meal, feeders can be produced at a reasonable cost to the farmer. In beef production it is essential to have a raw product that has been bred for meat producing qualities so as to have a good foundation. It is also essential to keep down the cost of labor, feed and shelter.

Much of the cattle feeding in the future will be done by the use of corn silage and some other roughage supplemented with such feeds as cotton seed meal. With the increase in price of grains of all kinds, and their demand as a human food, much less will be fed to cattle. Many sections of the East are admirably adapted to the growing of corn for silage, and other roughages, all of which can be marketed to advantage through beef cattle. The results of the steer feeding work at the Pennsylvania State College reported in the last issue of The Practical Farmer show some striking results which might be studied to advantage for the best rations for eastern conditions.

Disposal of Dead Animals

Often when animals die on the farm no disposal is made of their carcasses other than to drag them into a field or a near-by woods, where they are left on the surface of the ground to decompose or to be eaten by buzzards, crows, dogs and other scavengers, or other animals which feed on carrion.

This practice can not be too severely condemned, because it contributes seriously to the dissemination of disease germs and the perpetuation of infectious diseases.

The carcasses of animals which have succumbed to infectious diseases like anthrax, hog cholera, blackleg, tuberculosis, etc., are charged with myriads of virulent disease germs, and just as long as they remain where scavengers can reach them and portions of them can be carried away promiscuously, they are a dangerous menace over a large territory to all animals which are liable to be attacked by disease germs. Even carcasses of animals which have died from other causes than infectious diseases, unless they are disposed of in a proper way, are a source of danger. Left on the surface of the ground their odor soon invites scavengers to congregate and to bring with them the infectious material with which they may have become contaminated by eating carrion elsewhere.

Dead animals on the farm should be buried deep enough to prevent them from being dug up again, or they should be burned. To burn large carcasses like those of dead horses and cattle is difficult and laborious and requires a large quantity of fuel. In most instances it is more economical to bury them. All animals which have died of infectious diseases and are buried should be covered with a heavy layer of lime before the graves are closed.

In the winter, when the ground is frozen, it is more difficult to dig graves than at other seasons of the year, but it is just in cold weather that disease germs remain alive and virulent longest in dead organic matter and that scavengers travel the longest distances, have

the best appetites, and are most likely to carry disease germs on and in their bodies. The extra trouble of digging graves in the winter is easily offset by the greater danger it counteracts. Low temperature prevents the multiplication of disease germs, but many kinds of disease germs are not killed or deprived of their pernicious possibilities by exposure to a lower temperature than the lowest reached during an icy, arctic winter.

Everywhere farmers not only should attend to the proper and safe disposal of the bodies of their own animals which unfortunately die, but they should insist on the proper disposal of the bodies of all animals which die anywhere in the regions in which their farms are located.

Clean, Palatable Feed Will Protect Milk from Taint

D. B. Etters, of the dairy department of the Pennsylvania State College, in outlining some of the essentials for the production of clean milk, emphasizes the necessity of feeding palatable and nutritious feeds which are free from mold or decay or any other defects which might injure the health of the cow or impair the quality of the milk.

Care should be exercised in feeding roots and plants such as rape, cabbage, turnips and other feeds with strong odors. These should be offered after milking, and the portions not eaten removed from the stable at least three hours before milking. Cows that are allowed to graze in fields containing wild onions or garlic should be removed from the fields several hours before milking time.

Many objections have been raised in the past to the feeding of silage, but these complaints are diminishing each year. Silage does not impart unpalatable flavor to milk as many have contended. The presence of such in the milk may be due to a poor grade of silage, improper feeding or the absorption of the odor from the stable air. A reasonable amount of a good quality of silage fed after milking time will not injure the quality of the milk. All uneaten silage should be removed before the next milking so that the stable air will not impart the odor to the milk.

The cow should have access to a clean supply of salt, and as much fresh, pure water as she will drink should be provided. Under ordinary conditions a cow will drink three times as much water as she gives milk, i. e., if she gives 30 pounds of milk she will require 90 pounds of water per day. Water is essential, not only for milk production, but also for food digestion.

A Profitable Jersey

Dosoris Park Lily 233783, owned by Charles Pratt Estate, Glen Cove, N. Y., completed a year's record of 16,728.1 lbs. milk, 957.4 lbs. fat, at five years eleven months of age.

Valuing her grain at \$37 a ton, alfalfa hay at \$26 a ton, and ensilage at \$5 a ton, Lily consumed \$177.95 worth of feed. If her milk were sold for 10 cents a quart (it was actually sold for twice this), she would have returned \$600.32 over cost of feed, in spite of the high valuation placed on it.

Lily has carried a calf for 188 days of her test, and completed her year's work weighing within 25 pounds of her weight at start of record, which was 950 pounds.

Thirty-four days after freshening, Lily completed a seven day record of 441.5 lbs. milk, 26.4 lbs. fat, and then made a thirty-day record of 1,928.8 lbs. of milk, 106.8 lbs. of fat.

Queries Answered

Chronic Diarrhoea.—G. G. R., Pennsylvania, writes: "Horse 15 years old consumes sufficient food, but although he is not worked hard he is in poor condition and he has diarrhoea most all the time."

No doubt his teeth require dressing. His inability to masticate properly causes him to swallow his food in an imperfectly masticated state. This irritates the bowels and causes diarrhoea and unthriftiness. Have his teeth dressed by a veterinarian. Get the oats rolled. Add to his drinking water one-quarter of its bulk of lime water. Feed on food of good quality and give regular exercise.

Peculiar Action of Cows.—A. L. North Carolina, writes: "I have had several cows, which in 8 or 10 days after calving staggered around in a circle and licked their shoulders. The attacks lasted about 24 hours. The cows ate during the attacks."

The actions indicate brain trouble, but it is hard to understand why several should be affected the same way at a given time after calving. It evidently is not serious, as you say the symptoms disappeared in 24 hours. Treatment would consist in administering a purgative of 2 lbs. Epsom salts and 1 ounce ginger, and following up with 1 dram iodine of potassium three times daily. It is probable that the attacks would be prevented by giving the purgative about a week after parturition.

Bitten by Rattlesnake—Unthrifty Team.—W. H. L., New Mexico, writes: "I have a 10-month-old colt bitten on the nose by a rattlesnake yesterday for \$15.00. I have with me snake bites on stock. What is the best treatment, also care and feed in case it does not die? Your answer will be late for this one, but in time for the next one, I hope. 2. Again, I have one mare and one gelding, both seven years old, weight of each about 1000 lbs. Both have been unthrifty for several months, and both have been eating dried native grass pasture and have all the well matured milo maize they will eat twice daily. This is bundle milk and fodder is good. Can you give me the cause and remedy for this unnatural appetite?"

1. In order that treatment against evil effects from the bite of rattlesnakes may be effective, it must be very prompt. It is claimed that the venom may be extracted if suction can be applied immediately. Immediate searing with a red-hot iron or the immediate application of strong caustics, as nitric acid, may destroy the venom. The most successful internal treatment is large doses of alcohol, as whiskey or other alcoholic liquors, and forced exercise. When poisonous actions do not occur, it is seldom necessary to adopt after treatment. If the wound be such as to cause a raw surface, it should be kept clean and dressed with an antiseptic, as a 5 per cent. solution of carbolic acid three times daily until healed.

2. It would be good practice to get a veterinarian to examine the teeth, and if necessary, dress them. Mix equal parts of sulphate of iron, gentian, ginger, and nut vomica and give each a tablespoonful three times daily. Feed on the best hay or grass you can procure and give a reasonable supply of grain, as oats or corn, three times daily, and regular exercise or work.

Fattening Calves.—D. D., Connecticut, writes: "Kindly advise me how I can fatten calves the cheapest, and best way: the rules of the board of health of the state of Connecticut do not allow calves butchered until they weigh 60 pounds. My calves cost too much to raise to that weight."

The cheapest way to fatten calves where skim milk is available, is to feed on whole milk for at least three or four days, then gradually change to sweet, warm skim milk to which a tablespoonful of ground flax seed has been added. Increase the quantity of flax seed as the calf grows older. If flax seed is not available, corn meal ground finely may be added; or a mixture of corn meal and oat meal. Some prefer to boil this, making a "porridge" of it before adding it to the milk. If skim milk is not available, one of the advertised commercial calf feeds may be used, along with "hay tea." Hay tea is made by boiling clean clover, or mixed hay, in water until the strength is extracted; cool to 98 degrees F., then add the calf meal, or porridge. "Cocoa shell milk," made by boiling the cocoa shell in water also makes a fair substitute for milk. However, there is nothing that will take the place entirely of cow's milk in some form, for fattening calves.

"Lameness in Horses" should help you to locate that "lame spot" your horse is carrying around. Are you reading this series of articles?

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TILE OR STAVE and cheap. Freight town—Red wood doors, continuous opening floor frame. Tile silos anchored by weight. Fire and frost proof. Superior to cement. Save money, too, by early-in-year shipments direct from nearest kiln, on factory to farm co-operation sales plan. Ask for booklet and details. Silo users make best local agents.

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DRISCO AND STANDARD Silos have always been famous for their uniform high quality and exclusive features. The strongest and lightest construction. Safe steel ladder. Sure anchorage. Money back guarantee. Send for free catalog, prices and the most liberal offer we ever made for early orders.

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ZYRO Metal Silos
Keep silage sweetest and better tasting because airtight. The loss is less. Zyro Metal Silos are proof against wind, fire, shrinking, swelling, rotting and rust. Airtightness is guaranteed.

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Placed in place by two men. Built in place by one man. Zyro Metal Silos give best results. Write for free catalog. The Cameron Concrete & Silo Co., 2110 Cane Creek and Grain Bldg., Raleigh, N. C.

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Full Size Without Raising CUTTERS—BLOWERS
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Getting Better Results in the Dairy

By D. T. HENDRICKSON

Successful dairying, like any other learned profession, is a never-ending process. It requires constant study and those who are ambitious to secure the best results, must be ever on the alert to take advantage of all suggestions in the line of improvement. As summer approaches, one must keep in mind that, as a rule, during the warm months the operation of milking is generally hurried to complete the work as soon as possible, and consequently many of the cows are not milked dry. When the animals are poorly milked, and some of the fluid is allowed to remain in the udder, there is not only a loss of milk, but a good milk producer may be ruined. When every bit of milk is not drawn from the animals daily the quantity of fluid will become less and less. The food that would have otherwise gone into the production of milk will revert to the production of fat and muscle, rendering the animal unprofitable as a milk cow. Do not allow the heat nor the annoying switching of the tail prevent clean milking. Keep the atmosphere of the stable cool by proper ventilation, and prevent the flies from annoying the stock through cleanliness about the buildings and screens upon the doors and windows. One of the many preparations to repel pests should be sprayed upon the animals.

During the winter and spring months the quality of much of the butter offered for sale runs very low, but the past season, perhaps more than ever before, the quality of the butter has been most irregular. Much of the poor quality of this dairy product is due to the desire of the makers or handlers to secure greater profits from the commodity, while other causes are faulty methods of manufacture and subsequent care employed. With many consumers price is not considered in buying butter if quality is secured, and little difficulty will be experienced in obtaining an increased price for an improved product. The field for the product of the farm creamery was never better than at the present time, and dairymen who find little profit in the production and sale of milk should consider the possibilities of farm butter manufacturing. With the proper attention given to butter making and the production of the fluid from which the butter is made, a product so high in quality can be obtained that there will be a ready sale for it.

This matter of properly caring for milk intended for butter making is one that needs more than ordinary attention. Any fluid unfit for utilization in the natural condition is also unfit for use in butter manufacture. Quality in butter is directly due to the attention given the milk during milking and its subsequent handling. It is possible for milk to be so impregnated with odors as to render it worthless for butter making. The feeding of strong flavored foods, as cabbage and other decomposed feeds, will cause the milk to become objectionably flavored.

Guard against stable odors in milk intended for butter. There is much butter that has the characteristic flavor of every stable smell. Pure air produced by perfect ventilation, will do much to free butter of its objectionable tastes. The cows, too, must be kept carefully brushed and the floors and gutters well cleaned. If there is the slightest possibility of stable odors gaining admittance to the milk, cool and aerate it immediately after milking. If the separation of the cream is not to take place for several hours after milking, hold the

fluid in a temperature below 50 degrees. It is just as important to exercise every care in the handling of milk, and to this end the milking itself, the utensils used in conveying and holding the milk and the storage place must be clean. The utensils should not only be washed thoroughly after using, but they must also be exposed to live steam or boiling water before using. On most farms milk for butter making is kept where it can absorb bad odors. Milk has the power of quickly absorbing these and holding them, imparting them to the ultimate product, butter. Keep the milk from the time it is drawn until ready for churning in an atmosphere that is sweet and pure.

No matter how carefully butter is made, it cannot be of good quality if bacteria are allowed to enter the fluid and develop in it while it is held in high temperatures. The first essential in the production of high grade butter is quality milk, and the production of quality milk involves the maintenance of healthy cows, foods free from strong flavors, clean stables, utensils, properly cleaned and sterilized, careful handling of the milk, its holding at a low temperature and an immaculate storage compartment. Better butter can be made on every farm if care is given each of these details.

It has been asserted by some dairymen that the feeding of crushed oats to cows will improve the flavor of milk. To ascertain the correctness of this theory a series of experiments was made by the Bureau of Animal Industry of the United States Dept. of Agriculture at the experimental dairy farm at Beltsville, Md. Six cows were used in the experiment; three were fed a grain ration of corn meal, bran and cotton seed meal; the other three were fed a grain mixture of five parts crushed oats and one part cotton seed meal. A number of samples of milk from the cows fed these rations were submitted to various persons in the dairy division and they were asked to indicate their preference. In all 50 opinions were passed on various samples. Of these 16 showed a preference for the milk from cows fed on crushed oats, 25 preferred that from the bran and corn ration, while 9 expressed no choice. The result shows that in these rations not only was there no marked difference in flavor, but, if anything, the ration containing bran and corn was more successful in producing a fine-flavored milk.

The following general facts should be observed in making up the ration for a dairy cow. A cow should be fed all that she will eat and digest well, giving due consideration to the cost, digestibility and composition of the food fed. The more palatable the food the greater quantity a cow will consume. Variety often increases palatability. A part of the ration should be succulent in nature, as such food stimulates the action of the intestinal tract, which stimulates vigor, thrift and health in the animal. Another important part of the food supply is water. Too often this is not given proper consideration.

The question then naturally arises, in what form shall this succulence be furnished? My answer is: Sowing crops or pasture in summer and fall, and silage during the rest of the year. Contrary to the opinion formerly held, the milk from silage-fed cows is not inferior in flavor or odor to the milk from cows fed dry feed. The condensed milk companies which formerly did not favor milk from silage-fed cows are now advising their patrons to put up silos. Great care

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An inch of rain coming down on a single acre of ground would fill more than 600 barrels of 45 gallons capacity each. This amount of water would weigh more than 110 tons, or nearly a quarter of a million pounds.

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Growing Sweet Clover

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Another use of sweet clover is to mix it with other clover and grass seed for pasture. In this way the stock will come gradually to like it and as it succeeds itself, may become more or less permanent. The plant is not a noxious weed, as some may think, but is easily eradicated since it reproduces itself by the seed entirely and not by the roots.

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The Editor's Book Review

Below are comments on some of the more recent books which have come to the editor's desk from the publishers. The modern farmer is a reading farmer of course, and like other business men we believe our farmers are building up libraries by the occasional purchase of books on farm subjects in which they are interested; in no other way can a farmer improve so rapidly or substantially in his chosen calling as by reading the best in farm papers and books and preserving for reference the written accounts of the experiences of others.

For our readers convenience, we will be pleased to furnish at the publishers prices any of the books reviewed below, or any other obtainable books on farming. Further, we will be glad to give suggestions regarding books on any given farm subject on receipt of request with stamp for reply.—The Editor.

LIPPINCOTT'S FARM MANUALS (Edited by Professor Kary C Davis, J. B. Lippincott Co., Publishers, Philadelphia.) From time to time we have had occasion to notice and commend several of the volumes in this clever and useful series of agricultural books. Before us at this writing, are four volumes which ought to find places in many of our farm readers' business libraries; these are as follows:

PRODUCTIVE VEGETABLE GROWING, by John William Lloyd, Professor of Horticulture in the University of Illinois. (340 pages, 192 illustrations. \$1.50 net.)

A book of equal value to the trucker, the home gardener and the student in the agricultural college. The cultural requirements of nearly every crop are analyzed in the light of many years' experience with vegetables, and the various steps in the economical production of vegetables, the tools used and the standard types of the vegetables themselves are all brought out in the capital illustrations which embellish the pages throughout.

PRODUCTIVE FEEDING OF FARM ANIMALS, by F. W. Wolf, Professor of Animal Nutrition, University of California. (362 pages, 96 illustrations. \$1.50 net.)

A practical digest of a host of experiments and much experience in the profitable feeding of all kinds of farm live stock. A book which every live stock raising farmer will find interesting and useful, both for study and frequent reference.

COMMON DISEASES OF FARM ANIMALS, by R. A. Craig, Professor of Veterinary Science, Purdue University. (334 pages, 124 illustrations. \$1.50 net.)

An authoritative guide to the farmer as to the causes, prevention and early recognition of common diseases of farm live stock—without trespass upon the domain of the veterinarian. Special emphasis is given to the cause and prevention of disease, and not so much to medical treatment, which for the most part should be left to the veterinarian; however, courses of treatment are suggested in the most necessary cases. Every live stock raising farmer will find this a handy and valuable reference volume.

PRODUCTIVE SWINE HUSBANDRY, by George E. Day, Professor of Animal Husbandry, Ontario Agricultural College. (363 pages, 96 illustrations. \$1.50 net.)

This book, by a man of recognized authority in swine breeding and raising, should be of particular value to our Middle Atlantic States farmers just at this time, when swine husbandry is so largely on the increase in this section. There ought to be "money in hogs" on most eastern farms, and a great many of our readers will do well to read and frequently refer to this excellent volume concerning the different breeds, the feeding, management, marketing, diseases, etc., of swine. A good book for the boys on the farm, too.

ANIMAL HUSBANDRY FOR SCHOOLS, by Merritt W. Harper, of the New York State College of Agriculture (Cornell). (The Rural Textbook Series. The Macmillan Co., New York. \$2 net.)

While primarily intended as an introduction to the study of animal husbandry in schools, this volume should be equally useful to farmers who wish to study the elementary, or foundation, principles of live stock raising; it is a splendid reference book also as to breeds and their points and the care and management of the various farm animals. The book contains 409 pages copiously illustrated and fully indexed.

MILK AND ITS PRODUCTS, by Henry H. Wing. The Rural Science Series, the Macmillan Co., New York. (\$1.50 net.)

This sterling work, which is described as "A treatise upon the nature and qualities of dairy milk and the manufacture of butter and cheese," is by no means a new book, but it has gone through two editions and so many reprintings and

proved so useful to a host of dairymen that it merits mention and commendation to the continually increasing number of dairy farmers who read these columns. A reading of its pages and frequent reference to them will broaden the knowledge of any farmer who keeps dairy cattle, and tend to make him a bigger and better producer of sanitary milk and its products. In its later edition the volume contains 125 extra pages, including a new chapter on the dairy herd and its maintenance and management.

THE FUNDAMENTALS OF LIVE STOCK JUDGING AND SELECTION, by Robert S. Curtis, of the North Carolina Agricultural Experiment Station. (Lea & Febiger, Philadelphia. \$2 net.)

This volume of 455 pages with 180 illustrations, is written to meet the needs of the extensive live stock breeder, farmer, fancier and student alike. A complete and convenient reference to breed descriptions through photographs and concise breed characteristics of horses, mules, cattle, swine and sheep is included and supplemented with the latest standard of excellence and scale of points of each of the important breeds. A very complete index makes the work particularly useful for ready reference.

AGRICULTURAL ENTOMOLOGY, by Herbert Osborn, Professor of Zoology and Entomology in the Ohio State University. (347 pages, 253 illustrations. Lea & Febiger, Philadelphia. \$2 net.)

This is a new type of book on insect pests designed to provide such knowledge of economic entomology as the student of agriculture or farmer should have in order to be able to classify and control any insect pest which may be encountered in ordinary farm experience.

Its particular value lies in the fact that it should enable any farmer or student to make the best use of current bulletins of State or Federal publication on a special pest of any crop or class of live stock.

HARPER'S A-B-C SERIES (Harper & Brothers, New York. 50c. each, net.) is a library of handy little pocket volumes of useful information on a large variety of subjects encountered in every-day life. Three of these little volumes which should be useful in the life of every farm family have come to the Editor's desk. They are as follows:

A-B-C OF VEGETABLE GARDENING, by Eben E. Rexford.

116 pages of helpful hints on how to make the home garden, what to grow in it and how to grow it. This book should be of especial help to the housewife who likes to have a little garden of her own, and wishes to know how to make the most out of it.

A-B-C OF AUTOMOBILE DRIVING, by A. Hyatt Verrill.

Here is a little book that every farmer learning to run an automobile will find helpful, both in attaining a mastery of his car and preparing in advance for emergencies which are sure to be encountered sooner or later. We think the final chapter, "Getting Out of Difficulties," will prove worth the price of the volume alone if the book is carried in the owner's pocket, which it is made to just fit.

A-B-C OF COOKING, by Christine Terhune Herrick.

This is not a cook book—it contains no receipts. It is just a lit-

tle manual of pertinent suggestions to the housewife whether she lives on a farm, or in town. Here are the titles of some of the chapters which will give an idea of the helpfulness of this volume: "Furnishing the Kitchen," "Food and Work," "Soups, Broths, Fish," "Cookery of Meats and Poultry," "Bread Making," "Sweets of Different Kinds," "Left-Overs and Their Uses," etc.

The Farm Windbreak

When it is desired to protect the farm home from northwest winds a good windbreak is invaluable. The economic and practical advantage of such a planting is too seldom realized by farm managers.

A good windbreak should be composed of some trees which grow rapidly and some which grow more deliberately. The quicker growers recommended by the Pennsylvania State College Agricultural Experiment Station include white birch, white and Lombardy poplar, white willow larch, allanthus and stag horn sumac, all of which are easy to secure and cheap. Of the evergreens Norway spruce grows faster and makes a splendid break when set 8 or 10 feet apart. Austrian and white pines and Douglas spruce are also good.

The slower growing trees include the longer-lived maples, oaks, spruces and pines. Spruce and other trees are to be had at very low prices from nurseriesmen. It is an advantage, however, to buy not too far from home.

A TWICE-A-MONTH JOURNAL of practical, every-day experience for, and by, men and women who take their living from the soil.

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SHEEP ON EASTERN FARMS

By W. H. TOMHAVE

CENSUS reports show that the sheep industry of the United States is on the decline at the present time and that the production of wool and mutton is not keeping pace with the increase in population. The constantly growing demand for lamb and mutton has caused the price of this article of food to increase in price so that by many it is regarded as a luxury. Wool has increased in price until today it is selling at a figure higher than at any time in the history of the country, with the possible exception of during the time of the Civil War. In the face of these conditions the total number of sheep has decreased at the rate of several million head annually during the past few years. Tariff legislation and other conditions have, in part, been responsible for such decrease. This decrease in numbers has been more noticeable on the western ranges than through the general farming sections of the country. The eastern part of the United States was at one time the foremost sheep producing region. There was a gradual increase in the number of sheep kept on eastern farms until about 1880, when the number began to decrease and has gradually fallen off until today there are fewer sheep on eastern farms than were kept in 1840.

Sheep are a profitable source of income if properly managed. There are two crops that can be secured from the farm flock each year. One of these is the wool crop from the entire flock, the other the crop of lambs that can be sold in the fall of the year. There is no class of farm animals that will grow into money quicker than a flock of lambs. Sheep are also regarded as the natural scavengers of the farms. They will consume and utilize nearly all kinds of weeds that grow on the farm and which are refused by other kinds of live stock. As weed destroyers they have no equal. Weed seeds of any kind that have passed through the digestive tract of a sheep need no longer be feared as a source of weed infection. The value of the manure produced by sheep is greater than that from other farm animals. It contains less moisture and carries a greater amount of fertilizing constituents so that less labor is required in handling and it makes one of the most highly appreciated farm manures.

There is an old saying, "It is better to grow into the sheep business than to go into it." This should be

basis of individual excellence rather than on the breed to be used. A breed with the combination of wool and mutton developed to a fair degree of excellence will probably be best suited for most farms. In the selection of the foundation stock for a commercial flock it is not important that all animals be purebred. In some cases it is more economical to select grade females and use upon them a desirable purebred ram. It is important, however, that the ewes be strong, vigorous and thrifty individuals, making them less subject to internal parasites. The ewes selected should all be of the proper conformation with good, strong backs, deep chests, well woolled, straight legs, so that the flock will make a good appearance, as well as being able to produce strong, vigorous offspring.

The selection of the ram is important. Nothing but a purebred ram should be used on either a grade or purebred flock of sheep. The lamb crop produced is influenced to a large extent by the ram used, which should be a strong, vigorous individual with plenty of masculine character. A weak, poorly developed ram should never be used.

There are two periods during the year when the



A Diminishing Product of Eastern Farms, which SHOULD be Increasing, and CAN be Made to PAY

As an illustration, in 1840 there were found on the farms in the State of Pennsylvania about 1,670,000 sheep. At present the total number kept is estimated at about 840,000 or just about one-half of the total number kept three-quarters of a century ago. This same proportion of decrease is noted in other eastern states.

This noted decrease in the number of sheep is due to several causes. In the first place, when the western ranges were open to live stock production it became practically impossible for the eastern farmer to compete with the West in wool and mutton production. About this same time the underground resources of Pennsylvania and other eastern states were developed, so that less attention was paid to agriculture. Such development also brought into the country one of the worst enemies of the sheep—the "miner's dog."

Even though there has been this general decrease in the number of sheep kept, the East has lost none of its natural advantages for wool and mutton production. There is probably no field that offers a greater opportunity for development at the present time than the restoration of the flocks of sheep on the eastern farms.

appreciated by every person who contemplates starting a flock of sheep on his farm. It is far more essential for a farmer to begin with a small flock of 15 to 25 ewes and a good ram, than to begin on an extensive scale. With a small flock of this size he will learn a number of things about the management of a flock that can only be learned by experience. The investment in a small flock of this kind is not great, and serious difficulties in the management can be avoided, which might not be possible with a larger flock. The additional expense of keeping a small flock will hardly be noticeable, as they can be kept most of the growing season on forage that would otherwise be wasted.

It is not deemed advisable to keep a flock of sheep alone for the wool produced. The price received for lamb and mutton is such that it must be given as much consideration as the wool produced. This should be kept in mind in the selection of foundation breeding stock. The breed to select becomes entirely a matter of personal preference. There are a number of prominent breeds of different types, all of which are desirable if properly selected and managed. It is far more important that the selection be made on the

flock of sheep will require close supervision in order to make them a success. These are at the time of breeding and during the lambing season. Unless a high per cent. of the ewes are bred, and produce lambs, the returns from the flock are materially decreased. If the lambs born are not saved the loss is equally as great. Thus it will be seen that some extra care and attention at these two seasons of the year are important. To insure a high per cent. of the ewes safely bred they must be in good breeding condition. The time to breed is during the months of September or October, the gestation period being five months, which will bring the lamb crop about the first of March, or before farm work begins. In order that the ewes may be in good condition for breeding, it is advisable to "flush" them. This is done by feeding them a small amount of grain in addition to the pasture, or allow them access to a new pasture of rape or second growth clover. If grain is fed, a mixture of three parts corn, three parts bran, three parts oats, and one part oil meal is recommended. This grain mixture should be fed at the rate of about one-third of a pound per ewe daily for several weeks before the

(Concluded on page 239)

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JUNE 1, 1916

The Late Corn Planting Problem

THE late spring may cause rather late preparation for corn in some localities, late with respect to the average date of planting. It may be a question in the minds of some as to the advisability of undertaking to plant beyond the usual time. This can be done with good results if the proper variety of corn is used. While the yield of some of these early maturing varieties is not so large, yet the grain is sound and thoroughly matured even when planted late. On light, sandy land south of the latitude of Philadelphia, Bristol will mature planted the 10th or 15th of June. Farther north Funk's Ninety-Day will be satisfactory, while for very late planting on cold, wet soil, a small dent variety known as Queen of the Prairie or Pride of the North will succeed very well. In fact, the latter variety will make corn in a very short season under rather adverse conditions. All of these varieties are well known to the seed corn trade and can be secured every season. The kind of soil, especially whether clay or sand, will determine largely the lateness of planting and the variety that should be used. A knowledge of these varieties will ensure a crop in many instances where the yield from ordinary seed would be immature and largely a loss.

The 1916 Peach Crop

PRESENT indications are that while the peach crop will not be as large this year as last, yet it will be large. The market situation last year was anything but satisfactory to both the grower and the commission men. Unless strenuous precautionary measures are taken the coming season will witness another glut in the peach market. Commission men should plan their campaign as soon as possible, in order that there may be a more perfect distribution of peaches.

Even during last year there were towns in the East where peaches were unobtainable except at very high prices. Such cases offer proof that in the handling and marketing of perishable products our system of distribution is far from perfect. There has been a tendency to center the peach markets in certain large cities, where it is comparatively easy to glut the market, while smaller towns less than a hundred miles away are actually devoid of peaches. Some system of adequate distribution is sadly needed. Shippers from a distance are not well informed as to market conditions in the large cities, and there ought to be some sort of a clearing house whereby in times of glut, cars could be diverted from these cities to smaller towns where better prices could be realized.

Commission men are, as a rule, efficient. No one house can hope to have the proper information as to likely small markets at all times. If the commission men in the large cities would pool their interests they might perfect and support a clearing house organization that would not only prevent wholesale gluts of

perishable products, but also be of benefit to its members from a financial standpoint, in that prices might be held steady.

The grower also has a part to play. He should avoid shipping inferior grades and poor packs to the large markets in seasons such as last year. If the 1916 peach situation is to prove a successful business venture for both grower and distributor, plans must be laid early and all parties work together.

The way that last season's peach crop was handled was another glaring example of not over-production, but under-distribution.

The Farmer and the Automobile

THE Experience Pool discussion of this subject which we published in the May 15th issue was a pretty strong argument in favor of the automobile as a profitable machine to have on the farm, from a dollars and cents point of view. It is notable that all the letters submitted for this Pool were most enthusiastic, while the wide variety of uses mentioned gives some idea of the extent to which the automobile may enter into the daily business life of the owner on the farm.

Time is money with the farmer, as with any other business man. When it comes to saving time in traveling moderate distances or in getting such things as fruits, vegetables, dairy products, poultry, eggs, etc., to market, the motor car is certainly in a class by itself.

In selecting a car to be used largely for business purposes the qualities which are essential should be carefully considered. These include design, power, cost of operation, cost and ease of repairing, as well as the amount of money to be invested, of course. Style and speed are not so essential as strength and reliability and a low cost per mile of operation. Then, too, a moderate priced car might be a very profitable investment for your purposes, whereas a larger and more elaborate car at twice the price might not be.

Some of our readers point out that they have found very satisfactory service in used or second-hand cars which have been thoroughly overhauled by reliable dealers. While these cars may be made attractive in appearance, you are usually investing more in actual service than in style—and, of course, service is what you are after in making a business investment.

Above all, don't forget that your car is a machine and that all machinery, whether on the farm or elsewhere, needs some care and attention. In fact, it will well repay you in lower cost of operation and maintenance, for giving it your very best care.

Don't Burn Waste Paper

PAPER is too valuable to be destroyed these days. The war in Europe has caused a great scarcity of the materials from which paper is made. As a result, the cost of all kinds of paper has advanced rapidly—from 50 to 100 per cent. already—and it is impossible to get some kinds at any price. In short, we are threatened with a paper famine unless the greatest care is taken to conserve the supply and to prevent waste. Fortunately, old paper, while not as valuable as rag stock, can be ground up into pulp and made into certain grades of new paper again. Instead of burning or destroying your waste paper it should be carefully collected in bags or made into bales and when enough has accumulated it can readily be sold.

The spending money will come in handy, and if every one will do this the paper situation will be helped very materially.

Getting Together for Large Profits

ON June 1st, 2nd and 3rd the farmers of Niagara county, New York, and adjoining territory, will get together at Lockport under the auspices of the Niagara County Farm Bureau and the Lockport Board of Commerce, in a three days Farmers' Congress, in which will be discussed, "Better Fruit and Systematic Sorting, Packing, Labeling and Marketing of Same." Niagara county is in the heart of New York State's greatest fruit raising section; they tell us that the value of that county's fruit crop last year was approximately \$7,000,000, and the belief is expressed that if the same thoughtful method and co-operation were introduced in that section which characterizes the fruit growing sections of the Northwest at least 50 per cent. could be added to that value.

These "get together" meetings in sections which have a common agricultural interest in the production and marketing of a predominant crop, are encouraging signs of better times for the communities which thus take up and thresh out together their

common problems, and lay out a program for the achievement of better crops and better markets. We wonder that there are not more of these meetings; other apple districts will do well to follow this example—and not only apple sections, but peach, grape, tobacco, market gardening, dairying and sections devoted to many other predominant crops, would do well to further their interests by study, discussion and the mapping out of definite plans for improvements in meetings of this kind.

One trouble with many of the attempted meetings of this sort is, that they don't bring together a sufficiently large percentage of the farmers interested to make the results effective. The men in charge of this Lockport meeting appear to have the right idea, as their announcement says, "there is to be fun intermixed, for the members of the Board of Commerce know that men are merely boys who have managed to grow up, and they recall the axiom that 'All work and no play makes Jack a dull boy,' therefore they have prepared a program of electrical illumination; fireworks, parades and special entertainments for the visiting farmers and their families; this should bring in a large number of farmers who would not be drawn by the serious business of the meeting alone, but once drawn in they will take a lively interest in the program of addresses by noted speakers, the discussions on standardization, co-operative marketing and kindred subjects, which the committee has provided, and in the demonstrations and exhibits which are also on the program. Let other community meeting planners take a leaf from the notebook of this committee."

Eternal Vigilance

ONLY a few weeks after the Secretary of Agriculture on March 31st called off the foot and mouth disease quarantine on the last area under suspicion in the United States, it is distressing to note that a new case of this dreaded disease has been discovered in Illinois. The authorities and the railroads have united to prevent its spread, and we believe have it fully under control.

While the first thought is naturally one of discouragement that our country is not entirely free from this live stock curse, we do not believe that there is really any occasion for this feeling. It is a question whether the whole country will ever be entirely free from this disease for any great length of time in the future; on the other hand, it is reasonably sure that with the knowledge of the disease and measures necessary to its control gained by local live stock district, state and national authorities from the terrible epidemic of a year ago, we will never have a country-wide spread of the disease again—that is, if our farmers and live stock men have so taken to heart the lesson of a year ago that they will co-operate promptly and in full harmony with the authorities.

This new Illinois outbreak should not carry with it a feeling of discouragement, but rather a lesson of watchfulness. Watch your herds carefully and remember that cattle are not the only animals that carry the infection; horses, hogs and many other animals transmit the disease although it may not appear on them. If you notice the slightest suspicious symptom, separate the animal under suspicion from the rest of your live stock, immediately notify the authorities, and co-operate with them in the fullest possible investigation. The meanest man in the world is he who, suspicious that something is wrong with one of his animals, shifts it to a brother farmer or stockman, thus endangering other herds and opening the gates to a wide spread of the infection.

Bulletin Helps for Farmers

Some interesting experiments with corn, which have been carried on for several years, are outlined in Bulletin No. 139, just issued by the Pennsylvania State College Experiment Station (State College, Pa.). The results of variety tests of corn for grain and for ensilage; of various methods of selecting and storing seed; of ear-to-row breeding and inbreeding with subsequent crossing of inbred strains; and of crossing varieties to obtain seed of the first generation cross, are tabulated and explained. The bulletin is free upon request.

"The Oyster-Shell Scale and the Scurfy Scale," is the title of Farmers' Bulletin No. 723, issued by the U. S. Department of Agriculture—a treatise which will be welcomed by fruit growers in almost all parts of the country. Another valuable issue in the Farmers' Bulletin series is No. 722, "The Leaf Blister Mite of Pear and Apple."

Getting Guaranteed Mileage—and More

A Straight Talk on Tires

(EDITORIAL NOTE.—A growing interest is being expressed by our farm readers in the subject of automobiles and they, in common with other owners of motor vehicles, often complain of the cost of the upkeep of their machines; tire expense figures as one of the heavy items in upkeep, and the complaint is frequently heard that the tires give out and require replacement far sooner than they should. This may be due to a number of causes, but the one predominating cause is misuse of the tires by the motorist himself—generally due to ignorance of the treatment a tire should receive to insure the longest life. It has therefore occurred to us that we could help the host of our farm readers who are using automobiles, or are considering their use, by publishing an instructive article on this subject. The following "straight talk on tires" is written by an expert, and deserves a careful reading and preservation for future reference.)

The guarantees of the tire manufacturer cover the average mileage that may be expected under all conditions. But the individual motorist may better this frequently if he wishes by giving a little extra attention and care to the tires on his car. It is more a matter of thought and planning than of actual work. The following suggestions are vitally important and very valuable. Read them—follow them—and enjoy the added tire mileage that will result.

TIRE TYPES.

Much delay and annoyance can be avoided, when ordering new tires, by specifying the style. Regular Clincher cases have stretchable beads and are designed for use on Regular Clincher (one-piece) rims; they are sometimes used also on Quick Detachable Clincher rims. When used on Regular Clincher rims, it is desirable for sizes including the 4-inch and above, to use clips or stay bolts to hold beads securely in rim clinches. When using Regular Clincher tires on Quick Detachable Clincher rims, it is necessary to use flaps to protect the inner tubes.

Quick Detachable Clincher cases have non-stretchable beads and can only be used on Quick Detachable Clincher rims and the split type of Clincher rims. This style of tire should always be equipped with flaps.

Straight Side or Straight bead cases have non-stretchable cables imbedded in the base and are designed only for Quick Detachable Straight Side rims and split type of Straight Side rims. This style should be equipped with flaps. Straight Side tires are sometimes used on Quick Detachable Clincher rims having filler beads fitted in Clincher rims. This is not to be recommended, however, as the base width of this style of rim is not suitable for Straight Side tires.



Courtesy of Firestone Tire & Rubber Co.

Overloading
Showing the breaks from excessive loads and the severe driving strains to be expected under such conditions. The remedy is larger tires.

OVERSIZE TIRES.

Weight and distribution of car, power, gear, ratio, speed and other points are considered by the car engineers and tire makers in determining the tire sizes necessary for equipment. It will be appreciated, however, that the usage of cars will vary on account of road conditions. Therefore it is reasonable to expect some trouble from the tires on a small percentage of cars, even though the equipment is satisfactory in every respect.

When tires are loaded beyond their

normal carrying capacity, the fabric is not only strained, but develops more hinging action and heat at edges of tread. The materials employed in the manufacture of tires are limited in strength, like other articles, and when taxed beyond that point will not be efficient.

Oversize tires were primarily designed for the exceptional hard service, but have come into general favor because of extra strength, easier riding cushion and longer mileage—in fact, experienced car owners specify the oversize tires, in many instances for original equipment of new cars. The resiliency of larger tires reduces the traction slippage on rear wheels, adds to comfort and lessens



Result of Careless Application of Tubes

vibration to the mechanism of the car. When oversize tires are placed on front wheels that were originally equipped with regular size tires, the overall diameter will be increased approximately one inch and the speedometer should be readjusted, otherwise the mileage recorded will be less than that actually traveled.

There is not enough added weight in oversize tires to affect transmission or differential or make any objectionable difference in the power. The advantages of oversize tires, without the inconvenience or expense of changing wheel equipment, are features which mean more safety and pleasure to motorists.

APPLICATION.

Before applying tires, remove rust and all other foreign matter from rims. If tires have been ridden deflated at any time, mud may have accumulated on rims and, unless it is removed, the tires cannot seat or fit properly. The danger of pinching inner tubes can be reduced, to a minimum, by using soapstone or powdered mica on the rims, so that the tire beads will slip easily into the correct position.

Inflate inner tubes just enough to round them out before placing them inside of cases. Do not use tubes of the wrong size, and be sure that the valves are equipped with spreaders adapted to the particular type of cases used—for instance, Clincher, Quick Detachable Clincher, or Straight Side. Valves in some tubes are equipped with universal spreader and therefore are suitable for use in all three types. Dust the inside of the case and the inner tube with powdered mica or talc. This will reduce friction and prevent adhesion of tube to case after being heated in service.

When the tires have been removed for any reason, it is a good plan, when reapplying, to reverse them; that is, to place the worn sides of the tires toward the car. It is not generally known, though it is a fact, that almost all the side wear to a tire occurs on the side from the car. This is due to road construction, rut wear, curb scraping, etc.

INFLATION.

The style of car construction, power, speed, road conditions, the expert or careless driver, and especially the weight and its distribution play an important part with strains to which the tires will be subjected—consequently, a fixed rule for inflation would, in view of these things, produce different results. Ordinarily the tires on front wheels

should be inflated to between 15 and 18 pounds per inch of tire section.

To determine the proper pressure for your tires multiply the width across tire, say by 15. A 4-inch tire, for example, requires 60 to 72 pounds (4x15 equal 60) (4x18 equal 72). A 5-inch tire requires from 75 to 90 pounds (5x15 equal 75) (5x18 equal 90). For rear tires multiply by from 15 to 20 pounds instead of 15 to 18.

Resiliency of the tires is primarily governed by the construction and quality, but is largely influenced by the inflation and weight carried. Naturally a 4-inch tire inflated to 70 pounds air pressure and carrying 800 pounds weight will ride easier than the same size of tire with the same inflation, and carrying 700 pounds weight. The heavier weight causes more deflection of the tires on the ground and increases the action of the side walls, thereby adding to the comfort of the ride. Increasing the deflection or flattening of tires, either by extra weight or reducing the air pressure, causes more of the vibration to

Courtesy of Firestone Tire & Rubber Co.



be absorbed by the tires than by the springs of the car.

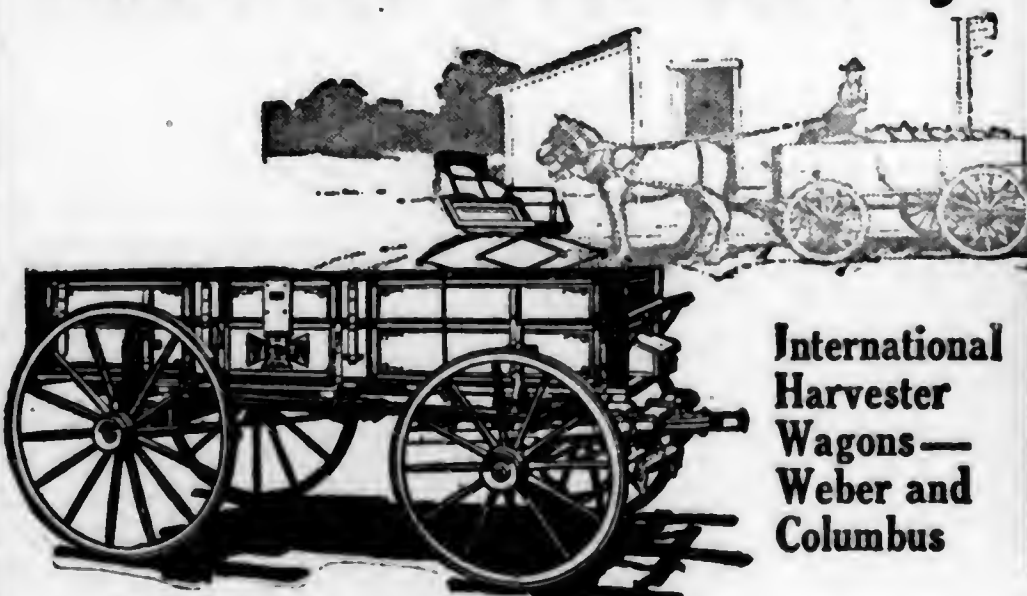
When soft, the tire runs against a wave in the tread rubber which will, from excessive stretching and heating, pull away and separate from carcass of body. The heat from increased action in the side walls of under-inflated tires softens the rubber cement of adhesive

RIM CUTS.

Protection from rim cutting is not to be obtained by any particular type of tire, but depends rather upon design, quality and usage. No good tire of any

(Concluded on page 236)

More for Your Money



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THE GARDEN

All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

Edited by W. F. MASSEY

The June Garden

While the early dwarf varieties of peas do very well without any support, the later varieties, like the Telephone, Stratagem and especially the Champion of England, need something to climb on. The old plan of sticking brush along the rows is unsightly in a well kept garden, and is really more expensive than to use the chicken wire netting, for this can be rolled up and put away when not in use and will last a lifetime for this purpose. To stretch it well it is necessary to have stout stakes, well braced, at the ends of the rows. I find this wire netting the best support we can have in the garden for climbing plants. For lima beans I use a 5-foot width and stretch it a foot from the ground at the bottom. Then the beans can be planted a foot apart in the row and soon reach the wire. Other lines are stretched for the early tomatoes, and these are set 2 feet apart in rows 3 feet apart, and trained to single stems on the wire of the same width as that for lima beans.

My early tomato plants were set in the frames the last of March, and went into the garden May 4th; in latitude of Philadelphia a week or more later would be safer. One plant I set April 15th has good sized fruit on it, as it struck no frost.

Usually I set out the well hardened tomato plants here the last week in April, keeping some in reserve in the frames in case of accident, for three years ago we had a freeze the eleventh of May, but at that time I saved my plants by covering them with the soil. I have found that the earlier we get the plants into the open ground and live, the earlier the fruiting. Therefore some risk is taken, for in this section we want to get the earliest fruit in late June.

But in June the plants will be in the open ground everywhere. Then the chief thing is to keep well cultivated, and watch the trained plants daily to pinch out the side shoots that will persistently start. Here, where the ever present crab grass takes possession of all uncultivated soil, it is absolutely necessary to train up the tomato plants off the ground, except in the large field culture where the plants are set far enough apart each way for horse cultivation. And even then in the late season they will get enveloped in the grass. In the garden, by training to stakes or wire we can keep the grass down, and for neatness alone this is essential. Then, too, I find that where the plants are trained to single stems we get the fruit much earlier than by letting them tumble on the ground.

I planted a single row of Black Valentine beans in mid-April. These stand more chilly weather than any other variety, and if frost threatens after they are up I take the little garden hand plow and turn a furrow over them. Then as fast as a row of string beans appears above ground, I plant another row and keep this up until August, so as to have a constant succession of the beans and a good lot when frost comes in the fall to be canned or packed down in brine for the winter.

Keep early Irish potatoes well cultivated, and spray with lead arsenate, 1 pound to 30 gallons of water, to prevent the Colorado beetles. As the plants begin to show bloom throw a furrow to each side of the rows.

Late Irish potatoes are planted in

June and July. For these I make rather deep furrows, and plant the potatoes and cover very lightly until they start to grow, and then gradually work the soil to them as they grow, until level, and cultivate them rapidly, shallow and level, and never hill up as we do the early potatoes, for in this season we need to conserve the moisture in the soil and do not hill up to dry out, but get the potatoes deep in the ground and keep the dust blanket on the soil to prevent rapid evaporation.

The first of June is early enough in most sections to set out the eggplants. I grow these in pots entirely and get large plants in 4-inch pots to set the last of May or early June after the soil is finally warm. Succession plantings of sugar corn should be made to keep up a succession. It will not do with corn, like beans, to plant a single row at a time, for the plants would not get pollen enough. Several rows must be planted at a time. Here we plant until the last of July, and further north the last planting can be made by the 10th of July.

I have growing the earliest planting of the Norfolk Market corn which now, the last of April, is above ground. This is not a sugar corn, but a very early dent, and can be planted earlier than the sweet corn. I follow this with Golden Bantam and Country Gentleman and Kendall's Giant, and make the latter succession crops of these and Stowell's Evergreen; with the last planting use the Kendall, as it is rather earlier than Stowell.

June is early enough to sow seed for the late cabbage crop. In fact, here I usually sow in July, as in order to have them head late enough we must not start too early. Plants of the Succession and Brunswick can now be set for the later summer and early fall crops.

Brussels sprouts I sow in June and transplant later, so as to get the little heads just about frost time. I have tried to get them in summer, but have always failed, as the early plants will usually succumb to the heat of August.

The Lucullus chard will now be making good sized leaves and should be thinned out to 6 inches apart, and the thinnings will make a dish that no one could tell from spinach.

Okra can still be planted. We use the tender pods as a vegetable, boiled, or use them to make Gumbo soup. After a bed of strawberries has made its second crop I turn them under for some late vegetable crop, and always plant a new bed every year. Keep up a never-ending war against weeds. Keep the garden absolutely clean and you will give no place for the cut worms to breed for the next season.

Queries Answered

Onion Cultivation.—J. M. G., Virginia, writes: "Kindly tell me which is best in cultivating onions, to work the soil toward or away from the bulbs? Thank you for advice about rhubarb last spring. We have now the finest in years."

As the onions begin to bottom the best method is to pull the soil away from them and let the onions form on top of the ground. You will get larger onions in this way than by leaving them covered in the ground. Here (Maryland) I plant my onions of the Yellow Potato variety in September and turn the furrows to each side late in the fall as a winter protection. Then in the spring the first hand working with the wheel cultivator somewhat levels the ridges and later I go through them with a hand weeder and pull the soil from them to the middle of the spaces between the

rows. My rhubarb is now very heavy. It was very heavily covered with manure in the fall and the rough part of this was raked off in the spring and the soil well worked between them. As my rhubarb has now been in the same place for four years I intend to lift in the late fall and divide and replant in a new place and give the usual heavy cover of manure.

Heading Lettuce.—P. C. C., Illinois, writes: "I have had trouble in getting lettuce to head up good. I have used improved Hanson and Big Boston. Please give me some pointers on growing lettuce. Also what fertilizers to use."

To head lettuce well in the open ground the plants must be had early, for no lettuce will head well after the weather gets hot, though the Hanson will stand more heat than the Big Boston. Then, to make good head lettuce, it must be pushed with plenty of readily available plant food in the soil. In preparing a plot for outdoor lettuce in spring I cover the land heavily with stable manure in the fall so as to give it time to rot, since I can buy only fresh manure, and fresh manure is of little immediate value on the garden. But if well rotted manure can be had it can be used in spring. Then in preparing the soil in spring I add fine raw bone meal liberally and set the plants, which have been started in a cold frame, 8x10 inches, taking care not to set them too deeply. Then, as the plants get well started in growth I sprinkle nitrate of soda between the rows, but not touching the plants. With this feeding the plants grow rapidly and will get into head before the weather gets too hot. Here I never try to have head lettuce later than June, and then begin again for August for plants to head outside, and later sow for plants to set in the frames to head for Christmas and New Year, and in December sow seed in a frame for plants to set for the outdoor spring crop as soon in late February in a cold frame in order to have good plants to set the last of March here.

A Two-Day Sale at Columbus, Ohio, to be Held June 14th and 15th, 1916

ON the above dates we announce a two days sale at which will be offered a fine selection of pure-bred Holsteins. The Ohio breeders have some very fine stock and they have entered some mighty good animals and the man who wishes to fill up his herd to capacity limits and wants to do it with good dairy stock—had best attend this sale.

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A feature of the sale will be Sir Jamaica Woodcrest who is by a transmitting son of Homestead Girl De Kol Sarcastic Lad and Alta Hartog De Kol, a 19-lb. 4-year-old daughter of Alta Posch's son and May Hartog Pauline De Kol 2nd, who held world's record for 7-day butter production at one time.

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HORTICULTURAL

Edited by C. A. McCUE

Black Raspberries

The black raspberry is a true American fruit and is not found growing wild anywhere except in North America. Its history as a cultivated fruit dates back to 1832, when Nicholas Longworth, of Ohio, brought a wild black raspberry out of the woods and cultivated it in his garden. About 1875 the black raspberry came into common cultivation and has been with us ever since. It is not as popular a fruit as the red raspberry, on account of certain diseases making some of the better sorts hard to raise.

The black raspberry will grow well upon almost all types of soil except a stiff clay or a wet soil. It is a heavy feeder and should have a rich, strong, moisture-retaining soil for best results; a well drained clay loam is ideal, although they will do well on sandy loams if plenty of humus is present to increase the moisture holding capacity of the sand. The ideal location is a gentle slope to the north, with bottom lands lying below. Steep hillsides are objectionable, as they are liable to suffer from drought, and the black raspberry is very susceptible to injury from scant water supply in the soil, especially during the period in which the fruit is ripening. There is no fruit that is more distasteful to eat than a black raspberry that has "dried ripe" upon the bush.

The propagation of the black raspberry is easy and comparatively inexpensive. They will grow readily from root cuttings, although this method is seldom used. The only profitable method of propagation is by tip layering. In sod lands or where the berries grow wild in the woods the tips will bury themselves; but in cultivated plantations the canes are blown about by the wind and get but little chance to fix themselves in the soil. In laying down the tips of the canes the best method is to use a spade to open the soil and thrust the tip of the cane straight downward. It is claimed that tips thrust straight downward make better plants than those that are laid in a horizontal position and covered with a hoe or plow. When a great number of tips are to be layered, it can be done very cheaply with a plow by plowing a shallow furrow alongside the row about where the ends of the canes naturally fall. The land side should be toward the row. The tips are then held in the furrow by a boy just ahead of the plow on its return trip to throw the furrow back.

The tips should not be covered until they begin to thicken at the end and assume a leafless, "snake-like" appearance. They usually reach this condition during late August and may be laid down from then on until October. The young plants often take root and start during the same fall and are transplanted the following spring. If the location be exposed to severe winds, the sowing of a cover crop in August will aid in keeping the buried tips from being twisted off by the wind. In windy locations, however, the rows should be laid out so that the prevailing winds blow across the row rather than lengthwise. In plantations that are heavily mulched the tips will usually bury themselves in the mulch and produce strong, thrifty plants with strong root systems. Never take a new plant from any but a healthy, vigorous cane, and be especially careful to see that the new plant is not affected with anthracnose. Spring planting is usually relied upon for black caps. If, however, the young tips have made a good growth in the

fall they may be lifted and planted in shallow furrows and well mulched with hay or straw for the winter. When the young plants have made several inches growth in the spring they are taken up and set in the field. The plants should be set rather deep. Plow a furrow about 4 inches deep, place the plants and fill in gradually as growth progresses. The plants should be pruned back when set if purchased from the nursery. Such plants are usually one year old and bear rather long canes. Cut back nearly to the crown; unless this is done new canes may start up from the pruned-off canes rather than from the crown.

The usual planting distance for black caps is 3x8 feet. If planted in hills they may be set 5x5 or 6x6. As the black caps do not sucker like the red raspberry they are easier to keep clean in the row and there is but little objection to row culture.

Tillage should be thorough and any good cultivator may be used. If it can be avoided, do not plow the plantation in the spring, but work it up with a cultivator. Keep up good culture until the crop has been harvested. If winter-killing of canes is common, the sowing of a cover crop in August may be of help in preventing this trouble.

Mulching with straw is a good substitute for cultivation, if plenty of straw is available that would otherwise go to waste. Mulching, however, is seldom practical except when the plantation is small. The mulch should be renewed about twice a year. A plantation once mulched should always be mulched, as the roots of the plants will work up into the mulch.

If one does not desire long canes for tip layering the black raspberry canes should be cut back to cause them to branch. The young shoots should be pinched back as soon as they reach the desired height. This is better than to allow them to grow long and then cut them back. If pinched back low the plant will at once throw out strong, vigorous branches near the ground. If, on the other hand, they are cut high only weak buds are left and they will not form a strong bush. About 18 to 24 inches is the right height for pinching back. Some have recommended clipping the laterals to make them branch; but there is but little advantage in this. It is best to leave the laterals until spring, when they may be pruned back to 12 to 18 inches.

One should not leave more than five young canes to the hill, and three is probably better. As soon as the fruit has been gathered, cut out the old canes and the surplus new ones. If any disease is in the patch, burn the pruned canes at once.

The plantation should not be allowed to overbear the first year; cut back severely.

Anthracnose is the most dreaded disease of the black cap, and some varieties, particularly the Cumberland, are especially susceptible to it. Spraying with Bordeaux mixture may aid in keeping it down; but it is questionable if spraying for this disease is a practical thing to do from the economic standpoint. It is probably better to renew the plantation frequently. If spraying is resorted to, the first application should be made when the young shoots are about 8 inches high, and aim to keep the growing shoots covered with Bordeaux until there is danger of discoloring the fruit with the spray.

When black raspberries are used for

evaporating purposes they may be harvested with a harvesting machine. This machine is a canvas tray about 3 feet square; under the side which rests upon the ground there are fastened a couple of shoes or runners, which allow it to be pushed along the ground. A pocket is made at the lower edge to hold the berries. The operator carries a wire hook in one hand, a bat resembling a tennis racket in the other. This bat is covered with canvas. The berries are allowed to become very ripe. The operator pushes the canvas tray up under a bush, pulls the cane over the canvas with the hook and then bats the berries off on to the canvas tray, where they fall into the hopper. The berries so gathered are allowed to stand in boxes in the field for a few hours to allow all insects that may have been gathered with them to crawl out and make their escape. The berries are then carried to the drying house and run through a fanning mill to remove all leaves and other rubbish.

The cost of gathering is about one-half a cent per quart. A good operator can

harvest 8 to 10 bushels per day. Taking into consideration the cost of looking the berries over after drying, we can place the cost at 1 cent per quart, as against 2 cents for hand picking. For retail markets the berries must be hand picked. The fruit should be kept cool and in the shade until marketed.

The details of drying are not properly a subject for discussion in this short article. The cost of drying and cleaning is about 2½ cents per pound.

Gregg, Ohio and Schaffer are the varieties most used for drying.

About four crops represents the profitable life of a plantation. The yield should be from 75 to 100 bushels per acre. Under good management an acre of black caps should yield about 750 pounds of dried fruit at a cost of about \$80. The profits should be about \$30 to \$40 per acre. If fresh fruit returns 6 cents per quart the returns per acre will be about the same as for dried fruit.

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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

Sudan Grass

During the past three years few plants have been more widely discussed than Sudan grass. The culture of the crop has widened considerably as the price of the seed has dropped from two or more dollars per pound to 12 cents. This is due to the fact that the plant matures seed in the latitude of the corn belt. The value of the crop to the general farmer is not as yet fully known. It requires some years to determine all the desirable and the undesirable features of a new plant as a farm crop.

Sudan grass is supposed to be a native of Egypt; at any rate, of Africa. It was first brought to the United States in 1909. The plant is believed to be the wild original form of our cultivated sorghums, with which it will cross pollinate if planted near together. Sudan grass is an annual grass-like plant, ranging from 6 to 10 feet in height when grown in cultivated rows on rich soil, to 4 to 5 feet when sown broadcast. The stems under the latter condition are quite fine, but where the plant develops more freely on account of space the stems may be as large as a lead pencil. The plant is inclined to stool very freely, as many as 20 to 50 stalks coming from one seed. Sudan grass looks very much like Johnson grass, but the two are entirely distinct, the latter being a perennial with root stocks. Sudan grass has a leafy stem, perfectly erect, and stands up well, seldom lodging. While probably closely akin to the sorghums, Sudan grass has only a slight sugar content, just enough to give it that sweetish taste so relished by live stock.

Sudan grass is adapted to a considerable range of latitude—from South Dakota to Texas. The plant has been grown with excellent results in both the semi-arid sections of the West and the humid areas in the East. In general, Sudan grass is adapted to those regions that grow sorghum well, although the former crop matures earlier than the latter.

The cultural requirements of Sudan grass are not exacting. It may be sown broadcast, or drilled in rows and cultivated. If sown broadcast or drilled in solid like oats, about three pecks of seed are required per acre. This method is preferred where there is plenty of rainfall, as the plant becomes too coarse when grown in rows under these conditions. If cultivated, the rows should be 30 to 36 inches apart. Should the ground be very weedy the rows may be as close as 20 inches. Early cultivation will keep down the weeds until the grass is well started, which will then smother out the weeds by shading. Three to 5 pounds of seed will be required per acre when sown in rows. The plant grows slowly at first and the ground should be quite warm before seeding. If sown on a cold clay soil, not much growth will be made until late summer. In general, Sudan grass should not be seeded until two weeks after the usual corn planting period. The plant makes a very rapid growth in warm weather and no gain is made by sowing early, particularly so if the land is inclined to be weedy.

Sudan grass is quite comparable to the millets as to its season of growth, although it makes a hay that is preferable to millet hay. It is cut only once at the more northern limit of its growth, but farther south is cut two or three times.

In the latitude of Baltimore it may be cut two or three times, depending on the season and moisture conditions and the time of cutting. Sudan grass is generally cut for hay when in full bloom. Early cutting is advisable when two or more cuttings are expected. The crop does not seem to deteriorate rapidly, even if the time of cutting is delayed. In the drier sections of the country the grass may be cut for hay with a binder, as it will cure readily in bundles. The yield of hay varies from 2½ to 3½ tons per acre per cutting.

Sudan grass may be used for growing in mixtures with cowpeas or soy beans. The advantage secured is a heavier growth of forage which will aid in curing the peas and beans. The mixture of seed for broadcasting should contain 15 to 20 pounds of Sudan grass seed and about one-half bushel of soy beans or cowpeas.

Chemical analyses show that Sudan grass hay when cut in full bloom contains nearly 5 per cent. protein. Earlier or later cutting does not seem to change the percentage of protein greatly. Thus the hay does not compare with red clover, alfalfa or soy beans in feeding value, a point which should be kept in mind. While the hay is readily eaten by stock, nothing definite can be said of the value of hay for animal feed, as no experiments have been conducted showing its rank as compared with other hays. When planted in rows Sudan grass yields large crops of seed, 8 to 12 bushels per acre. The seed weighs 32 to 40 pounds to the bushel. Where seed is desired, care should be taken to plant Sudan grass apart from any of the cultivated sorghums, as they will cross pollinate. In regions south of Pennsylvania Sudan grass seed should be free from seed of Johnson grass, as the latter will become a pest if introduced. Seed grown in the more northern and western states is less likely to be mixed with Johnson grass.

The ordinary farmer should go slow in making extensive sowings of Sudan grass. While the plant makes a large growth it will not compare with the legumes for making a high-class feed. Then the effect on the soil should be considered. Sudan grass being akin to the sorghums and millets is likely to leave the soil in a poorer condition than in the case of the legumes.

Queries Answered

Cowpeas for Soil Improvement.—W. K. P., Maryland, writes: "I want to plant some cowpeas this spring, with the idea of enriching the soil through the storage of nitrogen in the root nodules. The crop I intend to cut for hay. 1. What variety should I sow? 2. Does the treating of the seed with cultures increase the growth of the crop to such an extent as to make it worth while?"

One of the best varieties of cowpeas for your section is the Whippoorwill. The Gray Crowder is also good. These are well adapted for hay making purposes. It will be well to inoculate the seed before sowing. If the land has not grown cowpeas recently, or if the peas have not given satisfactory growth in the past, it will be well to inoculate. Often a marked increase in yield will be noted from the use of inoculation.

The Fertilizer Problem.—J. H. S., Delaware, writes: "Since at the present time it is impossible to purchase potash considerable controversy has arisen in this neighborhood as to the use of acid phosphate, lime, etc., for the best results. What should your wheat and tomato phosphate consist of and how much should be used per acre? Do you recommend the use of lime? If so, on what crop and how much per acre?"

For tomatoes I should use 4 per cent. nitrogen, one-half of which is derived

from nitrate of soda or sulphate of ammonia, and the other half from tankage, and from 8 to 10 per cent. phosphoric acid. The application should be 600 to 1000 pounds per acre, depending on the fertility of the soil. For wheat use 2 to 3 per cent. nitrogen, in the form of tankage, and 10 to 12 per cent. phosphoric acid, from acid phosphate. If cowpeas are turned under no nitrogen need be used. Use lime where soils or a green manure crop is turned under.

Bud Worm.—W. C. W., Virginia, writes: "In this section we are bothered from now on to June 15th with what we call the bud worm. They seem to be worse in the low bottom places and on heavy land. The corn will begin dying from the bud first. Is the bud worm an insect or a disease of the corn? If an insect, give your method for destroying same."

There is no doubt that the insect is the bud worm, as it is more destructive in the low lands. There is no substance that can be safely applied that is effective in controlling the insect. Late planting is the most effective means of avoiding the ravages of the bud worm. If planting is delayed until the young bud worms have begun pupating they will not injure the crop. The warmer weather which will accompany later planting will cause the corn to grow so rapidly that it will be so far advanced that the second generation of bud worms will not injure it. Plant your corn about 10 days later than usual.

Growing Beans.—R. W. H., New York, writes: "In your issue of April 16th there is an article regarding the profit in bean growing. Please give me an estimate of the quantity of beans required to plant an acre, the returns from that amount for a good average, and the best kind of bean to plant."

The quantity of beans required to plant an acre will depend on the variety, as these differ in size. Of the pea beans known as the Marrow or Boston, about one-half bushel are planted per acre. In this case the rows are about 28 inches apart. If the kidney varieties are planted 5 to 6 pecks of seed are used per acre. The yield per acre will vary all the way from 15 to 35 bushels, depending on the soil and culture. One might expect 20 bushels per acre under average conditions. The white pea beans are more generally grown for commercial purposes.

Corn and Soy Beans.—S. K., Virginia, writes: "I have bought 100 bushels of black soy beans and I wish to drill in the same row with corn. What distance do you advise between the corn and bean plants? The rows are to be 4 feet apart. What variety of corn should I plant, early or late, so as to have them mature at nearly the same time? I wish to save some of the ripe beans, as well as the hay. Do you think with my corn harvester I can cut and bind the same together in bundles and shock together? I later will run these through a corn shredder. My idea at present is to use a late variety of corn, then have the corn plants 10 inches apart and the bean plants 3 to 4 inches. Is this right?"

For your latitude use one of the later varieties of corn. Boone Co. or Johnson Co. White should mature along with the beans if they are not a very late variety. The corn plants may stand from 16 to 22 inches in the row, depending on the fertility of the soil. The beans should range from 3 to 6 in number between each two corn plants. You will have no difficulty in harvesting the beans and corn with a corn binder. A shredder will thresh the beans if dry. It is a good plan to lime if the land is very acid. Be sure you inoculate the beans before planting.

Soy Beans Again.—J. C. W., Western Pennsylvania, writes: "Having 3 acres which were planted to corn last year (sod before corn) and needing roughage than I have promise of, I am led to ask whether you would advise me to plant this field to soy beans, and if so, what variety? I have put a small amount of lime on this land and it was covered with manure before plowing this spring."

If you desire the soy beans for seed, plant in rows 32 to 36 inches apart and

cultivate. A grain drill may be used for planting, providing some of the grain spouts are closed. About one-third of a bushel of seed will be required when sown in this manner. If you intend to cut the beans for hay sow 1½ bushels per acre as you would drill oats or barley. Sow about the first week in June. Get seed of the Ito San or the Ebony varieties, for your section. Inoculate the seed with cultures before sowing. By all means try the crop, as I believe you will be well pleased.

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of the National Fertilizer Association
1419 Munsey Building 11 11 Baltimore, Md.

POULTRY

Edited by F. V. L. TURNER

All letters, inquiries and requests in reference to poultry, should be addressed to the Poultry Editor of The Practical Farmer, Philadelphia, Pa.

Practical Poultry Talks

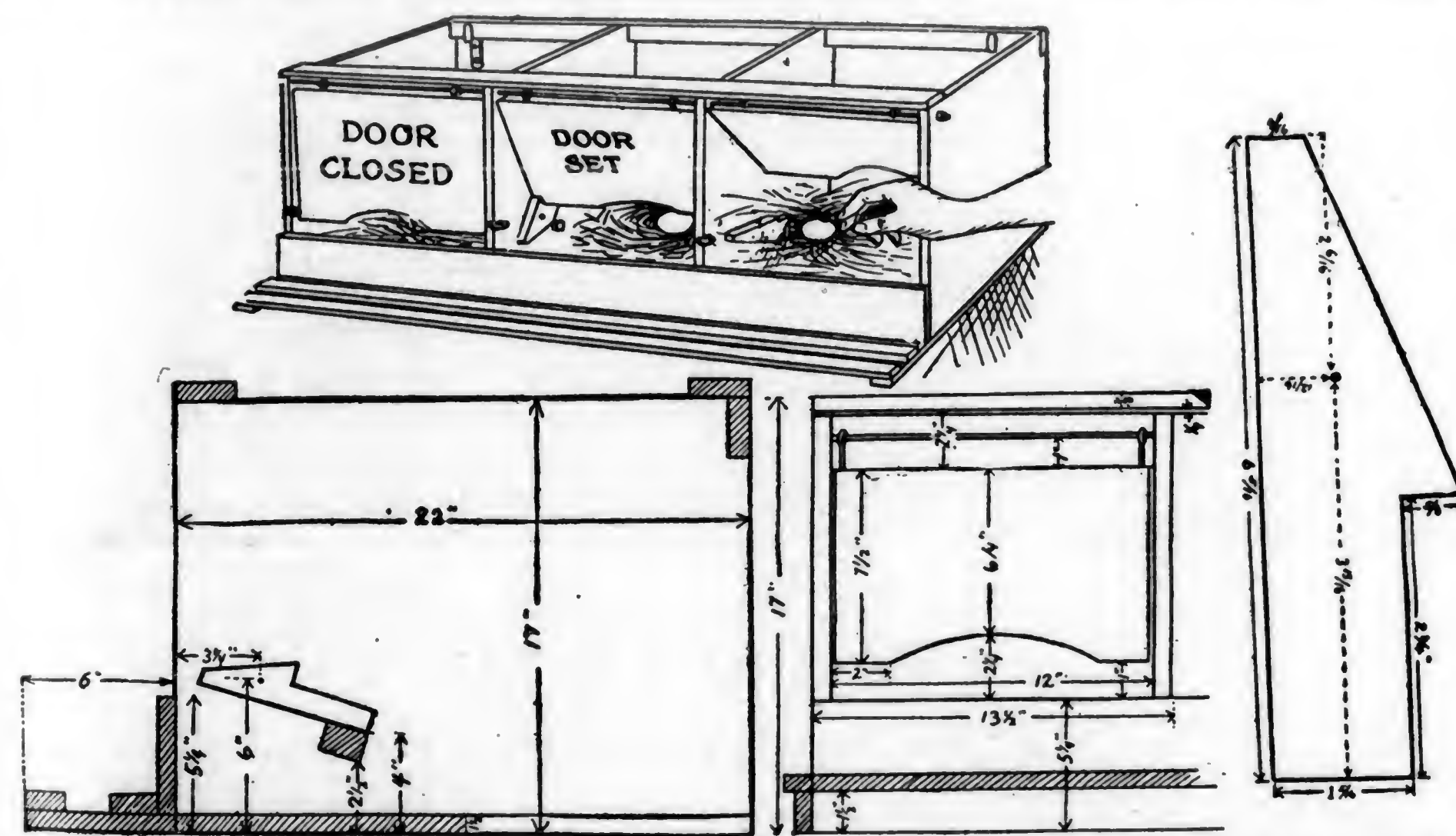
Trap Nests and Egg Production

To know each egg, its history through generation after generation, is the why of the trap nest. Without the trap nest nothing, in increasing the productivity of the flock, would ever be accomplished; it is the certain and sure historian of the hen's ability to lay eggs. Plainly and quickly put, the trap nest is an ordinary nest with an automatic door, a door that is always open except after the hen has entered the nest. Its door is a simple hinged one that depends upon a gravity catch to keep it open only for the entrance of the hen to the nest, automatically locking itself by gravity and the gravity operated catch.

chicks therefrom by pedigree and the saving of such males from heavy layers as will be required for reproducing the flock along heavier laying lines.

Four hundred of these trap nests are used at the Newark, Delaware, contest, and one man can operate them, recording each egg each day, from 500 layers, and then have time enough for other duties. Five hundred of these nests are in use at the Connecticut contest for 1000 birds. Since the introduction of this nest, five years ago, its use has become quite general; its simplicity appeals to every poultryman and its use has done ever so much to increase the egg production of hundreds of flocks, large and small.

The diagram given will enable the poultryman to utilize any suitable box, the door and trigger being the only



This trap nest, the one illustrated with this article, is the invention of F. H. Stoneburn, formerly professor of poultry husbandry, Storrs Agricultural Experiment Station, and is free to any one wishing to use it. It is used in the egg laying competitions now operated at the Connecticut and Delaware Experiment Stations. From the illustration it will be noticed that the door is swung on a rod if more than one nest comprises the battery of nests, or two screws, one each side at the top of door, can replace the rod if the nests are built in single units. It is cheaper to build them in units of more than one. Do not attempt to skip the dimensions if you expect the best results—the nest must be ample in order that the hen may be comfortable and to prevent any dislike for her laying quarters. Skippy nests will force the hen to lay on the floor or any other roomy place, and in consequence all record will be lost of each hen's individuality.

By the statement, increasing the productivity of the flock is meant the knowledge gained through trap-nesting that permits the picking of layers for breeders that possess the qualities desired, such as a disinclination to broodiness, to premature laying, to late laying, to early or untimely molting, and an inclination to any vice, such as egg eating, feather pulling, etc. Also registration of eggs from those hens which will be used as breeders, the registry of

parts requiring special measurements; if the box selected is wider, higher or deeper, the dimensions of the trigger do not change; the door can be widened or made higher, if needs be, gravity overcoming size, changes of board thickness, etc.

Of more importance than any other one thing is freedom of action of the door supports and trigger, both of which should act with perfect ease. It has been suggested that the hole in the trigger be made large enough to take a small brass ferrule or bushing, that there will be no possibility of sticking on the screw in damp weather, or from any cause. This brass tubing can be purchased, cut in suitable lengths, cheaply, compared to the cost of the whole scheme of installing any number of units.

What We Are Asked

Bowel Trouble.—R. C. H., New Jersey, writes: "My chicks suffer with more or less bowel trouble, becoming pasted up behind and a few dying; what shall I do to overcome this difficulty?"

The remedy for this trouble is removal of the cause. Some condition of feeding is responsible and should be corrected. Too much beef scrap is one cause; musty grain is another; overeating of grain and too little green food is still another and tainted food of any kind is equally a source of trouble. After looking about for any of the causes and removing them, if found, give to a 2-weeks-old chick 10 drops of

sweet oil every other day until three doses are administered. Do not attempt to remove the pasty mass by force or by soaking with water—gently break the mass by squeezing lightly between the fingers after applying enough (a few drops) of sweet oil to soften. Nature will do the rest. Twenty drops of oil can be given as a dose for a 4-weeks-old chick, and so up to a teaspoonful to older chicks.

Just at this time, when the young stock is more or less susceptible to any epidemics, especially chicken pox, it is well to use preventive measures. Germicides should be employed in all coops, colony houses and in roosting places. Lime water should be added to every pail of drinking water. Spray everything the chicken uses, except the drinking and eating vessels, with a germ killer and make your lime water by dropping a cocoanut-sized lump of unslaked lime into a gallon pail or crock of water, let it stand over night and then add a gill of this solution to every half gallon of drinking water.

Worth While Suggestions

Now is the time to cull the flock—don't keep anything that is poor, scrawny, deformed, poorly feathered or that looks freaky—known young stock,

that is, stock you have a record of as from poor layers, crate up and grade for market purposes.

If you have 20 poor culls and 10 that are heavy or fat, ship each lot in a separate crate; never mix the good market chickens with the poor. The price is the low one on mixed stock and the same for the poor, but the good taken from the mixed will bring a very much higher figure.

June hatched chicks need a lot of shade, fresh drinking water often and sour milk. Do not use very much corn meal in the ration.

Live Poultry Wanted at market prices. Can use unlimited quantities from one coop up. All inquiries promptly answered. Quick returns. **GIBBS & BROS., 322 N. Front Street, Philadelphia, Pa.**

Eggs, 15, 41, 42. Thoroughbred Rocks, Wyandottes, Reds, Leghorns, Hamburgs, 19 varieties. Catalogue, W. Orpingtons, Houdans, Campines, Light Brahmans, 12, 41, 30, 42. S. K. Mohr, Coopersburg, Pa.

POSITION WANTED on poultry farm by depend years experience. References furnished. **Finishes Wisconsin 4-year Agricultural course in June. J. K. Greene, 401 Murray St., Madison, Wis.**

DISPERSAL SALE OF POULTRY, ETC.

FOR J. CORBIT DAVIS, at Pen-y-Bryn Poultry Farm, Ambler, Pa.
Thursday, June 1st, 1916, at 11 A. M.

1200 S. C. W. Leghorn laying hens, Wyckoff and Tom Barron strains, 1 and 2 yrs. old; 125 Barred Rock hens, 1 yr. old; 125 S. C. and R. C. I. Red hens, 1 yr. old; 20 White Rock hens, 2 White Rock cockerels, 1 yr. old; all pure bred stock of selected laying qualities. 1500 chicks, 7 wks. old, 8000 chicks, 3 to 4 wks. old, mostly S. C. W. Leghorns. Poultry houses, 20 colony houses, 10x12 ft.; 20 colony houses 4x6 ft.; 6000-gal. Candee hot water incubator, all other poultry equipment, and all the stock, machinery and equipment of 80-acre farm.

This is a complete dispersal sale, as Mr. Davis is now devoting his entire time and attention to the business of Davis Brothers Rolling Mills, Philadelphia, Pa., and desires to make an entire clean-up of his farm interests. Write for circular.

H. J. DAGER, Inc., Ambler, Pa., Agents and Auctioneers.

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headed by the Blue Ribbon winners \$1.50 per 15, all clear eggs replaced. Buy the kind that produce heavy layers, and blue ribbon winners. Order from this ad.

Harry Lantz, Lafayette, New Jersey.

Chicks That Live, \$15.00 per 100
"Tiffany's Superior, Silver Laced, White and Partridge Wyandottes, Pekin, Rouen and Runner Ducks, 100, 100. Houdans \$1.50, 15. Prompt shipment. Satisfaction guaranteed. Real Guarantees in Post Free. **J. A. YARE, HARTFORD, N. J.**

Buttercups, Alvinian Strain
from hens laying from 250 to 300 eggs yearly. Stock \$2.00 up; eggs \$1.50 up per 15.

CARL F. SAHLER, EARLETON, N. J.

EGGS that hatch from Runner Ducks, \$1.50, 15. Bronze Turkeys 4 lb. form, 25 lb. hens, 35 cents each. White Leghorns, 28 Egg Trap Nests, \$2.00, 100. Houdans \$1.50, 15. Prompt shipment. Satisfaction guaranteed. Real Guarantees in Post Free. **J. A. YARE, HARTFORD, N. J.**

Baby Chix S. C. Red and W. Leghorn—The Quality and Price of our Chix for May and June delivery will interest you. Our Illustrated Catalogue containing Real Guarantees in Post Free. **Just Poultry Farm, Dept. 8, Southampton, N. Y.**

Day Old Chicks for Sale Cheap 11 varieties, per week. Better hatched than ever. Circular free. **Old Honeys Hatchery, Dept. F, New Washington, O.**

EGGS Barron and Wyckoff S. C. White Leghorns, 70 each, R. P. Rock 80 each. Large handsome birds bred for super egg production. \$1 per 15. By parcel post free. **RICHES FARM, Emporium, Pa.**

EGGS FOR HATCHING from White Leghorns of the greatest layers of large White Eggs, \$5.00 per 100. **T. W. YARE, HARTFORD, N. J.**

Are you interested in Buttercups? "The Coming Breed" For reliable information of the breed, its breeders, and bona-fide Club Members, address Secretary AMERICAN BUTTERCUP CLUB, Ulatka, PENNA.

25,000 Chicks White and Brown Leghorn 70 each, R. P. Rock 80 each. broiler chicks 60 each; for June, July and August. Booklet free. **Keystone Hatchery, Box 23, Richfield, Pa.**

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OUR EXPERIENCE POOL

All our readers are invited to contribute their experiences on the topics under discussion. \$2.00 will be paid for the best, and \$1.00 for the next best contribution, and 50c for each other article published. Contributions must be in our hands 15 days before date of issue.

Topic No. 1197, JUNE 15.—Do you keep accurate farm accounts—Income, expenditures, inventory, etc.—and what have you accomplished thereby? Outline (briefly) your system.

Topic No. 1198, JULY 1.—We want your experience with strawberries; have you found them a profitable crop and to what extent? Give your acreage, varieties grown and any special care which has proved effective. Manuscripts limited to 250 words—if you can tell your story in less, so much the better.

Topic No. 1199, JULY 15.—Sheep on Eastern Farms. The decline in the number of sheep raised on eastern farms during the past twenty years has been very marked, but we are told that sheep can be raised profitably in the East, both for wool and mutton. We want the experiences of eastern sheep-raising farmers as to whether or not they have found sheep profitable, with such details as to breeding, raising and marketing as can be put in a 250-word contribution.

Topic No. 1196.—To What Extent Have You Consulted Your State Experiment Station and County Agricultural Expert in Your Farming, and with What Success as to Practical Results?

W. H. R., Pennsylvania.—Our state experiment station and county agricultural expert are ever ready to help those who want it. I have written to the expert station concerning dairy rationing, milking machines, variety tests of wheat, and about other matters concerning which I desired information, and they always answered promptly and to the point. They also sent me all bulletins which I asked for. When I wanted information concerning a pneumatic water system and sewage disposal, I wrote to the state Department of Agriculture and the farm adviser on this subject came to my farm and worked out a complete set of plans for me.

I derive the most good from the county agricultural expert, because he is nearer at hand and can be consulted personally more often. Through his assistance we started a cow testing association and a Holsinger breeders' association recently. Just this week I received formalin and directions for treating oats for smut, from him. Last fall I got hardy northern alfalfa seed through him at a very low cost. I have gotten so much information from him on so many different subjects which I wanted to know about, that it would be impossible for me to list them.

C. C. C., Jr., Virginia.—Indeed I would dread being deprived of the help and assistance of my state experiment station and my county expert and demonstrator on farming. Some of my neighbor farmers seem to think these fellows can tell them nothing, but most farmers in this section are getting awake to the fact that our state experiment stations, together with good farm papers, are our best, cheapest and most practical way of getting next to the profitable way of farming. Our experiment station men came through this country a few years ago, after our farmers had made a complete failure at raising alfalfa, and convinced at least a few that alfalfa could be successfully raised in this section by knowing its nature and cultivating it intelligently. Today there are hundreds of acres out in alfalfa and it is making the owners good money. The same is true of dairying in this county. Demonstrators from the experiment stations came through here and convinced the farmers that we had an ideal location for the dairy business and a few farmers ventured into it. They were greatly assisted by bulletins from the stations and by good farm papers. Today the dairy business has got my spraying formulae from the state bulletin on spraying. I find all their spraying formulae perfectly reliable and they cover about everything on earth the farmer might wish to spray. Our state bulletin on spraying materials alone, telling how to mix them, etc., is a great deal more than we ever read, for I find that nothing pays me better than spraying. Demon-

strators from our experiment station have done a great deal for our farmers in the way of getting better crops during a dry season. They gave lectures throughout the county, telling the farmer how to tide his crops through a drought. Much of their theory has been put to practice here with the most gratifying results.

From our experiment stations we can get a number of valuable bulletins that every farmer should have and read, on such subjects as spraying, home mixing of fertilizers, trucking, poultry, hogs, sanitary conditions of the farm, etc. These bulletins contain valuable information and many farmers are finding it out and are calling for the bulletins. As far as my observation goes, the farmer of Virginia is letting a valuable thing slip through his fingers when he does not take advantage of all that our experiment stations and county agricultural experts offer him in the way of bulletins, lectures, etc.

R. A., New York.—We would be almost afraid to farm if we had no experiment station. Figuring everything out for ourselves would be too expensive. We have a county farm bureau and when things go wrong we call the manager over the telephone and present the case to him first. He may have the required information right at hand, or be able to get it for us easily; if not, he can usually tell us where to go next. Before we had a farm bureau we appealed directly to the state experiment station, but, of course, the bureau can give quicker service. Much might be said of the practical benefits of both, but only an illustrative case or two need be cited. Last summer some choice blackberry canes were dying. We called the bureau, described the case, were told to send specimens to Geneva, and received our reply shortly—"Cane maggots." We kept them out, had no further trouble, and made much stockier plants thereby. When army worms threatened wholesale destruction the farm bureau had them practically under control within two days. No farmer should overlook the experiment station mailing list.

G. F. S., Delaware.—We have, we believe, a copy of every bulletin ever published by our experiment station. Our name, also, being on its mailing list, we receive its publications as distributed. Moreover, whether we read them at once or not, we file them for ready reference at any subsequent time.

When we wish information on subjects which we think the station staff can give, we feel free to inquire of them, and, while endeavoring to cause them as little trouble as possible, their prompt and even cordial reception of our advances encourages us to use them without restraint. We may ask about fertilizers for certain crops, or a der special conditions; may send a specimen of a diseased plant, a sample of soil to test for amount of lime needed; may ask where we can get an implement which we have not seen advertised in any periodical, or even some little-known ornamental bush. We usually are satisfied, although at times they may answer so conservatively, or even confess ignorance, that we may be disappointed. Again, with but very few exceptions we have had no cause to regret having followed their advice; while the times when it might appear that loss had resulted from their suggestions, other causes for the failure, unknown to us, might have been at fault, hence we can not accuse them.

Our experience is that our station is practical, and we believe that to be deprived of its privileges would be an irreparable loss. True, it has not the facilities nor scope of some of those in larger states, as New York, etc., but this lack may be offset by the greater familiarity of the staff with conditions and needs of practically every district of the state, such as the former can not have. Our county agents have not been sufficiently long with us to demonstrate their full value, but as we become acquainted with them we consider them an acquisition—the experiment station at our own door, as it were. We sincerely hope that greater and greater re-

sources will be given our station and advisers, for, seemingly, they stand for progress.

N. C., Missouri.—We are unfortunate in that we do not have a county agricultural expert; but in addition to having my name placed on the mailing list of our agricultural experiment station, so that I receive all their publications, I frequently consult them by letter, and have received much benefit from their advice.

First, I have benefitted from their advice in regard to the use of commercial fertilizers. Following their advice I have found that it pays, and pays well, to use fertilizer with wheat, and especially when seeding to timothy and clover. It not only pays in the yield of wheat, but goes a long way toward insuring a stand of timothy and clover. Then I have derived much benefit from their advice in the matter of balancing up a ration for fattening hogs. I find that I get a much better and cheaper gain by using a concentrate very rich in protein in connection with corn for a fattening ration. Again, several years ago, when hog cholera was raging around me, I consulted our state veterinarian and he recommended vaccination with serum alone. I saved my drove of hogs, while many who did not vaccinate at all, and others who disregarded our veterinarian's advice and vaccinated with both serum and virus, lost many hogs.

P. E. L., Maine.—When I find a new insect I send it to the experiment station to learn if it is injurious, and if so, the remedy. Whenever any plant is attacked with a fungous disease I send a sample to the experiment station to learn its name and how to treat it, and the same with weeds.

Last year I sowed oats on land so badly infested with kale and mustard that people predicted my crop would be worthless, but by writing to the agricultural experiment station and getting directions for spraying with sulphate of iron I raised a crop so clean that I have sold it for seed. In fact, whenever I am bothered about any farm question I write the experiment station at once, and have always found their advice practical and reliable, so that I look upon the agricultural experiment stations as a *sine qua non* in modern farming.

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Lightning Rods 6c per ft. Best quality. Copper caps. Buy direct. Freight prepaid. Satisfaction guaranteed. Complete installing directions. Valuable catalog and sample free. Robinson & Seidel Co., Box 4, Washingtonville, N. Y.



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See California's farms & orchards Visit San Diego Exposition & Yosemite

Very low fares and tourist-sleeper economy with personal escort.

To California only \$72.50 round trip from Chicago, \$70 from St. Louis and \$60 from Missouri River. On sale May 1 to Sept. 30; final limit, Oct. 31. Still lower fares June 9 to 16 and July 23 to 30; final limit, two months. Excursion fares from other points also.

California has a delightful summer climate—cool by the sea and in mountainous regions—right time to see growing crops. In vineyards and orchards one finds delectable grapes, apricots, peaches, figs and Valencia oranges. Berries and melons come early; almonds and peaches later. Here, too, one can enjoy the green fields of alfalfa, are other June-July activities. Personally-conducted parties in tourist sleepers enable you to make the journey in comfort and with economy.

Fred Harvey meals and lunches—good eats—low cost. Write me for full details of land seekers' excursions, and especially ask for that "Farmers' Special" picture book.

C. L. Seagraves, General Colonization Agent
Arlington, Tex. & Santa Fe Ry.
3017 Railway Exchange, Chicago

The Women's Exchange

This is the farm women's own department—for them and by them. It is devoted to the discussion of topics of everyday interest to the women of the farm family. The Practical Farmer invites—and expects—not only to write your experiences on the topics under discussion but also to propose topics for future discussions. The best letter published herein each issue will be awarded a prize of one dollar, and for each other letter published we will pay fifty cents. Address

WOMEN'S DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

JUNE 15.—Summer Beverages. We are coming to the hot, thirsty days of the year, and we are told not to drink too much water during the hot spells; what is your best harmless thirst-quencher for the children and the men on the farm? Give one receipt only—your very best—but tell just how you prepare and serve it.

JUNE 1.—The cherry season is approaching. Tell us what you do with cherries other than plain canning; give just one receipt, or method of handling and make your contribution brief, but as complete as possible. What we want is something new in the way of a toothsome cherry product.

JULY 15.—Describe your greatest improvement this year toward making your yard and house (externally) more attractive. Your article should contain not over 250 words and should deal with original or radical improvements and changes—not just painting or planting a few flower seeds.

All contributions to the Exchange must reach us at least 15 days before date of issue in which the topic is to be discussed.

Give the Receipt of Your Favorite Substitute for Meat on Your Home Table, and Method of Serving it.

Mrs. E. W., Mullica Hill, N. J.—Our favorite substitute for meat is bean croquettes and they are both nutritious and good. Here is my receipt: 1 pint of white beans, ½ cupful of cream, yolks of 2 eggs, 1 tablespoonful flour, 1 tablespoonful chopped parsley, 1 teaspoonful onion juice, 1 teaspoonful salt, and pepper to taste. Soak beans over night, drain, cover with fresh water, boil an hour, drain, throw away water, cover with fresh water and boil until tender, drain and press beans through colander; rub 1 tablespoonful of butter and the flour together and add cream; stir until almost boiling, then add the yolks of eggs, stir again for a minute over the fire, add bean pulp and all seasonings; mix and turn out to cool. When cool form into cylinders, dip in egg, roll in bread crumbs and fry in hot lard. Serve with tomato sauce.

Mrs. P. H. S., Susquehanna, Pa.—Vegetable roast is a good substitute for meat. Take 2 cupfuls strained beans, ½ cupful strained tomatoes (the pulp, not juice alone), add 2 well beaten eggs, 2 tablespoonfuls peanut butter which has been creamed with an equal quantity of cold water, 2 onions chopped fine, salt, pepper and sage to taste; then add enough dry bread crumbs or rolled crackers to thicken. Mix thoroughly and bake in greased bread tin until solid enough to slice when cold.

Miss J. M. G., Buchanan, Va.—Our best meat substitute is cheese bread, made with sour milk. Sweet milk may be used, leaving out the soda, but we find it lighter and more wholesome made as follows: 3 cupfuls stale bread (either biscuits or loaf bread, or both), crumbled or cut in cubes, 1 pint diced cheese, put into buttered pudding pan in alternate layers, 4 eggs beaten light and stirred into 1 quart butter milk; add 2 scant teaspoonfuls of soda, salt and pepper to taste; pour over bread and cheese; dot with butter and bake until set and lightly browned. Tomato sauce or stewed tomatoes are nice to serve with this dish.

Mrs. J. C. W., Homer, N. Y.—As a meat substitute, beat 1 egg, add 2 cupfuls of milk and heat quite hot but not boiling, add ½ cupful of grated cheese and the same of chopped nuts—Brazil nuts or pecans are good—a scant teaspoonful of salt; a little butter or cream improves it. Pour this over 3 shredded wheat biscuits that have been crumbled into a baking dish, and bake in a hot oven about 10 minutes. Serve immediately. This is enough for four or five persons. Nuts and cheese make a good substitute for meat, served in any form.

Miss E. M. S., Uniondale, Pa.—Corn chowder is our favorite substitute for meat, made as follows: 2 cupfuls of sweet corn, 4 cupfuls of milk, 4 cupfuls of diced potatoes, 2 tablespoonfuls of butter, 1 onion, 8 soda crackers, salt, pepper, 2 cupfuls boiling water. Put about half of the butter into a sauce pan, add the sliced onion and cook slowly for 5 or 10 minutes. Then add the corn and potatoes with 2 cupfuls of boiling water. Let cook for 25 minutes, then add the milk, rest of butter, salt and pepper. Break the crackers into a dish and pour the chowder over them. Serve while hot. This is delicious.

Mrs. M. B. M., Pine Bush, N. Y.—As a substitute for meat, I make a good dish of corn, potatoes and onions, with a slice or two of salt pork. I peel and slice about a pint of onions and put them on to cook with boiling water to cover them; then peel and slice about the same amount of potatoes and add to the onions; while they are cooking I fry a thin slice of pork and when it is kried out and brown I add it all to the kettle. If I want to I use a can of corn (a pint),

or if it is salted corn, I have it freshened and add that when potatoes are cooked. Season with salt and a little red pepper and add a little butter or cream if desired. Serve hot, or it is nice warmed over in a little cream, or cream dressing.

Mrs. A. D. A., Trappe, Pa.—This is our substitute for meat. It is cheap, wholesome and nutritious—baked macaroni with cheese. Boil ¾ cupful macaroni in 2 quarts of boiling water for 20 minutes, drain and blanch with cold water. Make a white sauce of 2 tablespoonfuls of flour, 2 tablespoonfuls of butter and 1½ cupfuls of scalded milk; add salt to the sauce until properly seasoned. Arrange a layer of cooked macaroni in the bottom of a buttered baking dish, sprinkle with grated cheese; repeat until macaroni is used up; pour over the white sauce, cover the top with buttered crumbs and bake for 20 minutes in a hot oven or until the top is a nice brown.

Mrs. E. E. S., Susquehanna, Pa.—Spanish beans make a good substitute for meat. Take 1 pint of pink beans, or any good bean that remains whole when cooked, parboil in one water, then put on to cook in boiling water. After cooking for an hour add one-half can of best tomatoes and a teaspoonful of salt. An hour before they are done add little red peppers (dried ones broken up preferred) sufficient to flavor highly—one bouquet pepper is sufficient. Cut three or four thin slices of bacon in dice, fry brown and put in beans; fry 1 medium sized chopped onion in the fat, add that and plenty of water so beans will be juicy when done. Cook slowly, and stir to prevent burning. Should cook an hour after bacon and onion are added, to be well blended, and should be hot with peppers and rich with bacon fat.

Mrs. J. R., Westfield, N. Y.—Our favorite substitute for meat is codfish and eggs. To prepare it take 2 cupfuls codfish picked in small pieces; let it stand for 15 minutes in cold water, drain and pour boiling water over it; after 5 minutes drain and squeeze dry. With it beat 2 eggs, 2 tablespoonfuls corn starch, 3 tablespoonfuls cracker crumbs, 2 cupfuls sweet milk; put ½ cupful butter in frying pan, when hot add mixture, cover and cook moderately for 10 minutes, stirring it once if necessary.

Mrs. J. R., Westfield, N. Y.—Our favorite substitute for meat is codfish and eggs. To prepare it take 2 cupfuls codfish picked in small pieces; let it stand for 15 minutes in cold water, drain and pour boiling water over it; after 5 minutes drain and squeeze dry. With it beat 2 eggs, 2 tablespoonfuls corn starch, 3 tablespoonfuls cracker crumbs, 2 cupfuls sweet milk; put ½ cupful butter in frying pan, when hot add mixture, cover and cook moderately for 10 minutes, stirring it once if necessary.

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Getting Guaranteed Mileage—and More

(Concluded from page 229)

standard type will be cut by any standard rim, if properly used. On the other hand, any type of tire will be injured if subjected to abuse. Under-inflation, dented and irregular rims, excessive loads, tire fillers and stiff reliners are the common causes for cutting and breaking above beads.

The flanges of a rim may be battered down and become rough from running a tire deflated for a considerable distance; the next tire applied, is sure to get cut above the beads.

Tires carrying heavier loads than those for which designed, may develop breaking at the beads where engaged by clinches of rim.

If rims become rusted from water working around beads when tires are run soft or through neglected cuts in the tire, or from neglect to put proper fitting on the valve stem, the rust should be removed with emery paper and rims painted with a coating of aluminum, graphite and oil or other good preservative solution. When applying a tire, be careful that flap does not slip underneath bead and crowd it in clinch of rim.

Under the impression that they are oversize, it is not uncommon for tires to be applied to rims of wrong size—for example, using 36x4 1/2 tire on a 36x4 rim. The diameter of this rim is approximately 28 inches and the diameter of the beads of the tire approximately 27 inches (Q. D. Clincher type) or approximately 26 inches (Regular Clincher type) therefore it becomes necessary to stretch and strain the beads considerably. Another thing, the 4 1/2-inch beads

are not constructed to fit a 4-inch rim and will not engage properly in the clinches. Good results cannot be secured when the beads are strained and crowded in this manner. The correct oversize tire for 36x4 rim is 37x4 1/2.

In some instances 38x5 1/2 tires have been fitted to 36x4 1/2 rims. The diameter of a 36x4 1/2-inch rim seat and the diameter of 38x5 1/2 beads are the same, approximately 27 inches, but the rim cross section in the clinches is not suitable to accommodate the beads of 5 1/2-inch cases—rim cutting, pinched tubes and unsatisfactory service will result.

When removing tires from rims, do not overlook pushing valve stems of tubes up far enough in tires so that it will not be necessary to pound fastening device of rims in order to release beads of cases. Rims are sometimes dented from pounding them in this way.

When chafing, cutting or breaking extends all around beads on both sides, repairs are expensive and not to be recommended. If the injury only extends for a short distance over one or both beads, a skillful repair man can make a good job at a reasonable cost.

NEGLECTED CUTS.

The service of tires will be abbreviated, to a considerable extent, if cuts, punctures and snags are neglected. Too much care cannot be exercised in avoiding injuries of this nature, as much as possible, or, at least, give them the proper attention within a reasonable period.

New macadam roads, especially when wet, are liable to damage the rubber

cover. It is recommended that the speed of the car be slightly accelerated and clutch depressed before coming up to loose, crushed stone in the road; it is better to coast over sharp stones rather than cause more tire traction by leaving gears engaged.

The rubber cover may receive numerous small snags and cuts if rear wheels lose traction and spin around on wet pavements or in mud or sand. If rear wheels slip, back car for a short distance and start forward. When this fails, give up rear wheels and wrap with rope or place something firm underneath to give the tires a grip.

The elasticity of the rubber permits a cut in the tread to expand when under the weight of machine and in contact with the road. In this way, such foreign matter as grit, sand and pebbles are forced into the cut. With each revolution of the wheel, the accumulation of foreign matter acts as a wedge and further forces itself between the cover and fabric of the tire.

It is not unusual for these bumps or "mud boils," if neglected, to cause a complete separation of the tread. An entire new cover can often be applied in a satisfactory manner, providing the fabric is in fairly good condition, but it is more practical and certainly less expensive to attend to the initial injuries when first noticed.

Owners are sometimes surprised and disappointed to learn from the repair man that it is not advisable to rebuild tires having good covers and appearing, from the outside, to be all right. This is often due to separation and decay of the fabric body caused by water working through neglected cuts. The fabric is the real foundation and strength of the tire, and it is, therefore, highly important to protect it.

It is suggested that after a long trip, or at regular intervals, the tires be examined carefully. Remove tacks, glass, nails and other objects before they cause serious damage; wash mud and other foreign matter from the tires and heal the cuts, punctures and snags with Cure-Cut or similar preparations on the market for emergency repairs. If unable to repair the injuries in this way, have the work handled by an experienced and competent repair shop.

CARE AND USAGE OF INNER TUBES.

If tire users better understood the construction of inner tubes, and conditions which contribute to their wearing out, it would be easy, indeed, to secure

prevent tubes from sticking to the adhesive "friction" of the fabric. A good lubricant, however, should be used.

Some motorists neglect dusting soapstone inside of the case when changing a tube—others use the soapstone so sparingly that it does but little, if any, good. If a quantity of it be dumped into the case it will collect at one point, and during the hot weather will heat up to such an extent as to burn the rubber of the tube, making it very thin, brittle and lifeless; this can be recognized by the honey-combed appearance.

Soapstone is the lubricant most used for tires and it is quite satisfactory, but not lasting; therefore a fresh supply should be put into the tires at least two or three times during the season. Powdered mica has proved a more durable lubricant than soapstone and quite as effective as graphite, as well as more pleasant to handle.

The lubricant should be dusted on the fabric all around the case, and on the inner tube.

It is essential that tubes be equipped with valves having the correct type of spreader. Most companies have, in the past, furnished tubes with especially equipped valves for Clincher cases, another type for Q. D. Clincher cases, and still another type for Straight Side cases. The Clincher valves spreader will not properly lock the Q. D. Clincher Straight Side type of tire on a Straight Side rim. The valve equipped with a Straight Side spreader will lock the beads on a Clincher rim or a Q. D. Clincher rim, but on account of difference in width and shape may damage the fabric of the case.

With a view to the extra satisfaction to the customer and the complications avoided by the dealer when the correct type is furnished in every instance, one manufacturer has designed a universal type of spreader, which makes it possible to use the same tube of a certain size in the Clincher, Q. D. Clincher, or Straight Side case with equally satisfactory results.

Don't overlook the importance of a tube with a properly equipped valve. Care in this respect will insure a proper anchor of tire to rim and eliminate much annoyance from tube being pinched near valve. Pinching of an inner tube usually occurs from oversight or carelessness in application of tire to rim.

When a tire is ridden soft there is a tendency for the beads to lift up at the



Courtesy of Firestone Tire & Rubber Co.

Importance of Inner Tube Lubrication

Deterioration to an inner tube due to the fact that too little lubricant was used.

more and better service. Spare tubes should not be carried in cardboard boxes as furnished from the dealers' shelves—there is danger of the tubes being chafed. Tube bags can be secured for this purpose.

If the car is equipped with smaller tires on the front wheels than on the rear wheels, an extra tube should be secured for each size.

The cross section of inner tubes is made a little smaller than the normal air space inside of the cases. It is not advisable to use a 4 1/2-inch tube in a 4-inch case. This usually wrinkles and creases the rubber with bad results. Do not use a 4-inch tube in a 4 1/2-inch case for any length of time. When this is done the rubber is required to stretch too much and the effect of heat and action due to displacement of air in the tire quickly uses up the nerve and life of the tube.

If put into usage for which it is not designed, the tube will not, as a usual thing, render efficient service. If it was practical to use one size in another size of case, tire manufacturers could effect a big saving in equipment and furnish only a few sizes of tubes.

Lubrication is most important to conservation of the tube, but it is a matter that is given least attention. Practically all tire manufacturers treat the inside of cases with a white solution to

toes due to the internal pressure and weight of car and sometimes permit the tube to work under bead. This is aggravated when the tire has been continually ridden soft and beads have been cut and broken by the rim. Don't crowd a tire of wrong size on a rim simply because you are able to do so by physical force. It isn't economy—aside from the injury to the beads, much annoyance can be expected as the result of tubes being pinched. All Straight Side and Detachable Clincher cases should be equipped with flaps, and it is important that same be of correct width, length and construction.

Not all pinched tubes are injured at rim side—the rubber may be pinched from a rupture in the fabric. For example, a break caused from a small cut or bruise. This is not a serious condition; that is, it will not materially affect the service of the tube, as repairs can invariably be made in a very satisfactory manner—either by application of patch, or when this is not practical, a new section or tube can be inserted by a competent repair man.

"Suggestions for the Health of the Children," Lesson No. 103 in the Cornell Reading Course for the Farm Home, will be welcomed by careful farm mothers who may obtain it by writing the N. Y. State College of Agriculture, Ithaca, N. Y.

The Practical Farmer

Live Stock and Dairy Section

EDITED BY W. H. TOMHAVE

Establishing a Swine Herd

By HUGH FERGUS

When properly managed, swine are the most profitable animals on the farm. They do not require nearly as much labor as other farm animals, especially in the summer, when they can be placed on pasture and forage crops and allowed to harvest the crops themselves. The capital required to start a swine herd is not excessive. With the increasing demand for pork and the good prices paid for the same, it can easily be seen that hog raising pays well, if intelligently managed. Hogs are economical producers and require less feed for the production of a pound of gain than other classes of live stock. When the hogs are placed on pasture or forage crops and are allowed to do their own harvesting, the animals keep healthy, labor is saved, and the land is built up and improved.

A SMALL HERD FOR BEGINNERS.

It would not be advisable for any one not thoroughly familiar with a business to start on a large scale. The same is true of the hog business. There are many difficulties and pitfalls, and to overcome these requires training in the school of experience. The thing to do is start in a small way, with a few hogs, and gradually increase the number as your experience and knowledge of the care of swine increases.

A PURE-BRED BOAR IS THE MOST PROFITABLE. Never use a grade or scrub boar, for improvement in the herd can not be expected if this practice is followed. The conformation and breeding qualities of the herd will be greatly reduced if a scrub boar is used. There is more profit to be realized from pure-bred hogs than from scrub stock. All pure-bred boars, however, are not desirable as breeders, although they have a smooth reading pedigree to their credit. The interior type and conformation possessed by some pure-bred boars would not bring about improvement in any herd.

SELECTING A BOAR.

You have probably heard the statement that the boar represents more than half of the herd. This is true because the boar exerts an influence on every pig farrowed. When selecting a boar, one should know and keep in mind the ideal of a well formed boar, possessing the right type, in order to distinguish between good and bad. A boar should possess plenty of vigor and vitality. He should have a short, broad head, a short, thick neck, a wide and deep chest, broad, level shoulders, a body smooth and free from wrinkles, and a well developed hind-quarter. He should stand straight on short legs. A broad, straight back with well sprung ribs is very essential. A smooth, wide and thick loin adds greatly to the value of a boar, and should show masculinity in his head and possess strong bone.

THE AGE OF A BOAR FOR BREEDING.

A boar is sufficiently developed and fit for service at the age of 12 months, or better, 18 months. If the boar is used for service under 12 months, he should be used sparingly. Many breeders make

Breeding Farm Mares

By W. H. TOMHAVE

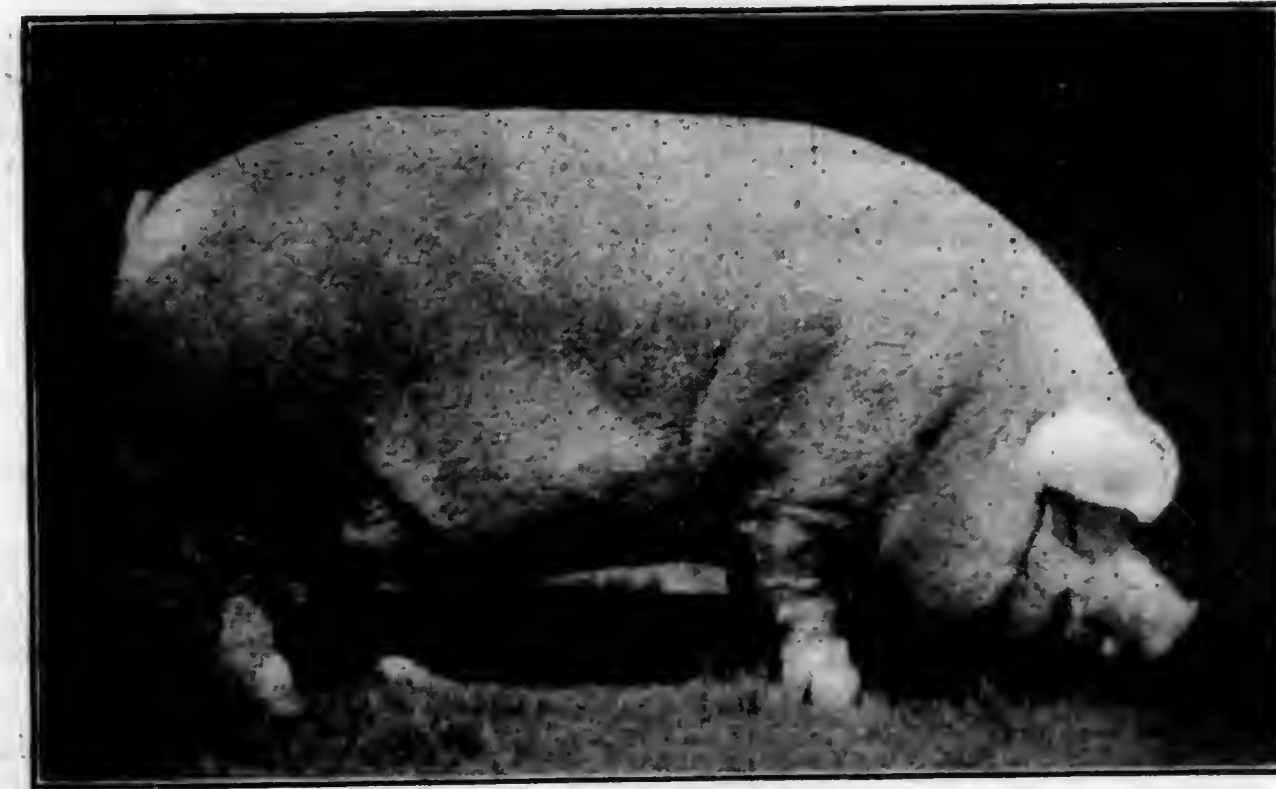
Each year the East imports a large number of horses from the Middle West to supply the demand from the farming section and from the cities. Such practice is expensive and means a large outlay of money, all of which goes to the farmers and horse breeders of the Middle West. Much of this annual outlay of money might be saved to the East if more mares were bred upon the farms and greater encouragement given to the owners of good pure-bred draft stallions. The East can produce horses equal to any sections of the country, and the growing of colts can be made a source of revenue on the average farm. It does not take long for a colt to develop, and if of the proper kind will make a substantial profit over his cost of production.

CARING FOR THE BOAR.

The boar should not be allowed to run with sows, because he becomes restless when in company with the sows, and the sows would be bred at times when it is not desirable. It is a much better plan to keep him away from the herd. He can be put into a small paddock, with a shelter and sufficient pasture to keep him in good condition. Plenty of fresh water and shade are very essential.

During the breeding season the boar requires liberal feeding, from 2 to 3 pounds per 100 pounds live weight is sufficient. During those months when the boar is not used for breeding the amount fed may be reduced. In the sum-

mer months when pasture is available, a 50 per cent. grain ration with pasture is sufficient. It is not desirable to breed more than 20 sows to a boar in a season.



A Purebred Chester White Boar with a Smooth, Wide and Thick Loin which Adds Greatly to his Value as a Sire

mer months when pasture is available, a 50 per cent. grain ration with pasture is sufficient. It is not desirable to breed more than 20 sows to a boar in a season.

THE SELECTION OF THE SOWS.

Many farmers who intend to raise hogs for market establish only a grade herd. By using a good pure-bred sire and keeping some of the best gilts in the herd each year to take the place of the older sows, that are culled out and sold to the butcher, a fine grade herd may be developed in a few years. When one desires to raise pure-bred hogs and sell them for breeding purposes, the sows selected for this work should be, like the boar, of the highest type and conformation for that particular breed. The type and the breed selected must be popular and up-to-date, so that the breeder can command the highest prices.

Pennsylvania.

If thinking of attending the National Dairy Show at Springfield, Mass., Oct. 12-21, write the Convention Bureau of the Board of Trade of that city for hotel reservations—instead of addressing the hotels direct. The committee says it can take care of all comers in spite of any ill-advised rumors to the contrary.

elves the proper care and treatment. The selection of the stallion to which to breed the mare is an important matter. In too many instances the selection of the stallion is not given serious consideration. Too often the mares are bred to a horse that is not of the proper type and is no more than a grade or a scrub. It is not possible to secure a desirable colt from such mating with the average farm mare. Such matings are largely responsible for the large number of "misfits" found on the horse markets and on many of our farms. Quite often the selection of the sire is determined by the service fee which is charged. When a grade or scrub stallion stands for a fee of ten or twelve dollars it is not reasonable to expect the service of a pure-bred stallion that represents probably several times as much money for the same rate. This is too often the case, however; the initial cost is regarded too high and yet is the best investment which the farmer can make. Even though the service fees of a good, sound, pure-bred stallion are five or ten dollars more, it is money well spent and a good permanent investment. It is well to compare the cost of his colts at the time of birth in order to fully understand the real difference. The only difference in the cost between the colt sired by a good pure-bred stallion and a mongrel or scrub is the additional charge for service, which may be five or ten dollars. There will not be a great deal of difference in the cost of feeding two such colts to maturity, so that even matured the actual cost of production is about the same. The colt sired by a pure-bred stallion will develop more rapidly and will be worth from \$50 to \$75 more when matured than the colt from the poor or promiscuous mating. Thus it can be seen that the investment of the additional five or ten dollars is well worth while.

There are too many stallions standing for public service at the present time that are not capable of siring good colts. They are poor individuals, of uncertain breeding, and are not capable of transmitting desirable qualities to the offspring, as they do not possess such themselves. A pure-bred stallion of good type and conformation will almost without exception transmit his good points to the offspring, because of his long-continued time of breeding for a definite purpose. A pure-bred stallion or any sire always has greater power of transmitting his characteristics to the offspring than does a grade or scrub. The mere fact that an animal is a pure-bred is not a guarantee of outstanding good qualities and individual merits must not be overlooked. A pure-bred stallion is equally as successful in transmitting his good points, if he possesses such, to his offspring as he is in transmitting his good points. Hence the importance of individuality.

The demand for horses may not be on the increase, but there will always be a call for a good horse. The market usually demands a horse that will meet the requirements of the draft horse trade

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7779.—Ladies' shirt waist. Cut in sizes 36 to 42 inches bust measure. The sleeves may be long or short and the revers may be used or omitted.

7781.—Ladies' Russian blouse. Cut in sizes 32, 36 and 40 inches bust measure. Striped and plain materials are used in making this blouse.

7786.—Ladies' shirt waist. Cut in sizes 34 to 42 inches bust measure. This waist has a front and back yoke and long or short sleeves.

7788.—Children's dress. Cut in sizes 2, 4 and 6 years. The dress closes at the front and may have long or short sleeves.

7797.—Ladies' apron. Cut in sizes 36, 40 and 44 inches bust measure. The waist back and belt are in one piece.

7795.—Children's rompers. Cut in sizes 2, 4 and 6 years. These rompers have one-piece bloomers buttoned to a waist that slips on over the head.

7803.—Ladies' skirt. Cut in sizes 22 to 30 inches waist measure. The skirt is cut in three gores and has side panels.

7776.—Ladies' dress. Cut in sizes 36 to 44 inches bust measure. The dress closes at the front and has a two-gored yoke skirt.

7824.—Ladies' skirt. Cut in sizes 22 to 34 inches waist measure. The skirt is cut in three gores and can be made with or without the belt.

7743.—Ladies' dress. Cut in sizes 36 to 44 inches bust measure. The dress has a 4-gored skirt with high or regulation waist line.

pensive barns are not necessary, as such an outlay greatly increases the overhead expense in maintaining the flock.

If it is possible to do so, it is desirable to have a place in a comfortable barn where the ewes may drop their lambs, and under such a system there will be less danger of losing them on account of becoming chilled.

Winter feeding is an important part of the successful management of a flock. The feeding must be done with the aim of supplying nutrients that will allow for the growing of a fleece of good quality and also develop a strong lamb. For roughage there is nothing better than legume hays, such as clover and alfalfa. This should be supplemented with a small amount of corn silage when available. If the hay is of good quality it is not necessary to feed grain in addition until the latter part of the gestation period. The same grain mixture recommended for "flushing" can be used for a few weeks before lambing and while the lambs are nursing the dams, or at least until they are allowed to go on pasture.

The lambs should be fed grain as soon as they will eat it. They will usually begin to nibble at grain when a few weeks old. A "creep" should be built in the lot, where the ewes cannot get at the feed allowed for the lambs. The lambs should be fed grain until some time after they have been weaned from the dams. The cheapest growth is made by the lambs before they are weaned if grain is fed.

Too many farmers fail to dock all the lambs that are born or to castrate all the male lambs that are to be sold on the market. Every lamb should be docked when from a week to ten days old. Lambs that are not docked are very unattractive in appearance, while the tail is a place for the accumulation of filth. It is also difficult to get the ewes bred when they have not been docked. The docking may be done with a sharp knife or a hot iron.

Buck lambs that have not been castrated will not fatten as well as the altered lambs and they are also discriminated against on the market. After August 1st most markets discount all buck lambs. Lambs that are several months old may be docked and castrated, but there is greater danger of loss at this age as compared to docking and castrating earlier.

There are many advantages in the growing of sheep, and there are also a few disadvantages that have ruined many flocks. There is an old axiom that should always be remembered—"Dogs and internal parasites have kept more than one person from becoming rich from growing sheep." The dog nuisance is one of the greatest drawbacks to the sheep industry. It is not alone the sheep that are killed, but the entire flock seems to be ruined after having been attacked by a dog. They seem to lose their "nerve" and never do well after an encounter with dogs. Stringent dog laws and the proper enforcement of them, is the only way this nuisance will be overcome.

Nearly every flock is troubled to some extent with internal parasites. These parasites are small hair-like worms that are found in the paunch stomach of the animal. Prevention is more effective than treatment. Fresh pastures for lambs is one of the most satisfactory ways of keeping the lambs free from these parasites. The presence of stomach worms is usually indicated by the lack of thrift, sluggishness and a falling off in condition. The color of the skin under the eyelid is usually a certain means of detecting the presence of these parasites. The skin under normal con-

ditions should be pink, but where affected by internal parasites it becomes white, showing a lack of proper circulation of blood.

There are many details in the management of a flock that cannot be discussed in the space available. Many of these details can best be secured through experience. There is a fertile field for the development of more and better flocks of sheep on the farms in the East. Such flocks started in a small way and directed by sound judgment in management, will gradually be the means of restoring the sheep industry to its proper place in the eastern part of the United States.

Warm Milk for Calves

The temperature of the milk or milk substitute fed to calves should be uniform from one feeding to another, when calves are fed from the pail. A thermometer should be used persistently. Just the exact temperature to maintain is not so important as the uniformity of temperature. However, 98 degrees Fahrenheit is a good temperature, since this is only a few degrees under the normal temperature of a cow's body.

Queries Answered

Horse Ailments.—R. V. C., Virginia, writes: "1. Two weeks after getting mare she began to discharge from her nostrils, cough and have difficulty in swallowing. I treated her and she is some better, but she has difficulty in getting her mouth to the ground when grazing. What is the cause and cure of this disease? 2. Colt has a wart the size of a penny on right hind leg, just above the hock. How can I remove it? 3. How can sore shoulders or teats be prevented? How can they be cured?"

1. She has laryngitis. It is infectious and she doubtless came in contact with some horse that was affected. Get a liniment made of 1 part liquor ammonia fortior, and 3 parts each of raw linseed oil and oil of turpentine. Rub her throat with this twice daily for two days, and keep it well wrapped with flannel bandages. Give her 20 grains acetanilid, 20 grains quinine and 1 dram chlorate of potassium three times daily. Feed out of a high manger and hold the pail high when watering, as she can swallow better with her head high. Give her the powders by placing well back on the tongue out of a spoon. Keep comfortable and do not work her until she has recovered. 2. Apply a little butter of antimony once daily with a feather until it disappears. 3. Use collars that fit perfectly and keep both collars and shoulders thoroughly clean. It is good practice to clip the hair off all parts that contact the collar. To treat a case, remove the cause; that is, give rest, and dress the raw surfaces three or four times daily with a lotion made of 1 ounce each of sulphate of zinc and acetate of lead mixed with a pint of water.

Feeding Cows and Fattening a Bull.—W. K. P., Maryland, writes: "1. I have an ordinary milk cow (Holstein). What feed would you advise for her—considering where I am located and the feed most easily procured in that locality? 2. I have a bull 3 years old. I want to get him ready for the butcher. What is the most economical way to do? I have plenty of salt grass pasture." The feeds available on this man's place have not been submitted, so that we must assume that all the concentrates are to be purchased. If this is the case it is quite likely that the common mill feeds are easily obtained. A ration made up of 4 parts corn meal or corn-and-cob meal, 2 parts of wheat bran, 1 part of gluten feed or brewers' grains, and 1 part of cotton seed meal or linseed oil meal should give good results. This grain should be supplemented with good pasture or hay and a gelling crop. The grain mixture should be fed at the rate of 1 pound of grain for each 3 pounds of milk produced daily. The Holstein bull should be fed a grain ration of 12 to 15 pounds of corn and 2 to 3 pounds of cotton seed meal or linseed oil meal per 1000 pounds of live weight daily, in order to get him in good condition for the butcher. In addition, he should have a liberal allowance of hay or pasture. The length of time required to fatten him will depend upon his condition. The corn may be fed as shelled or broken ear corn or corn meal may be used. Mill feeds, as a rule, are too expensive to use as a fattening feed.

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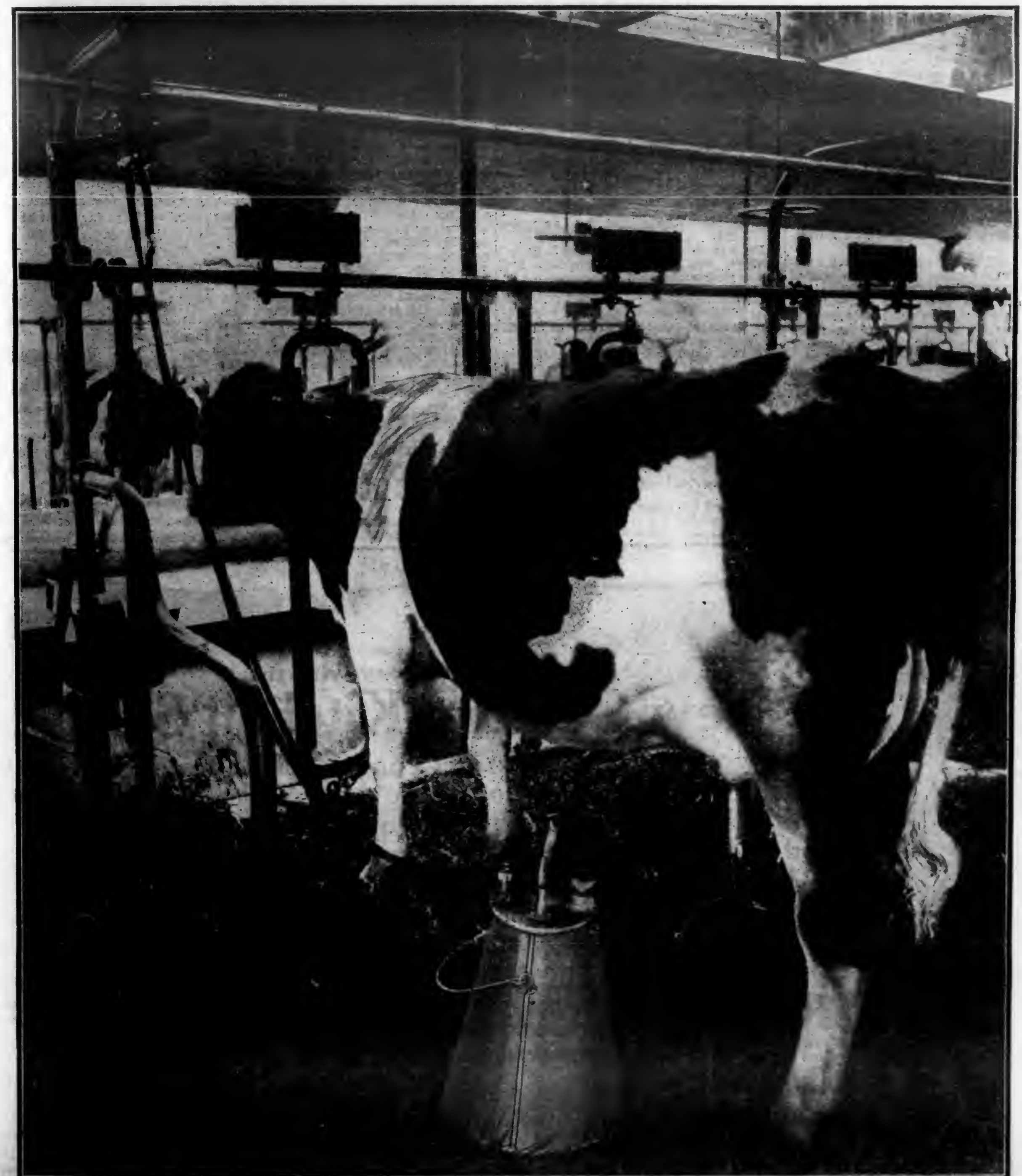
The Practical Farmer

PUBLISHED CONTINUOUSLY SINCE 1855

Volume 112
Number 12

PHILADELPHIA, JUNE 15, 1916

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Nearly every flock is troubled to some extent with internal parasites. These parasites are small hair-like worms that are found in the paunch stomach of the animal. Prevention is more effective than treatment. Fresh pastures for lambs is one of the most satisfactory ways of keeping the lambs free from these parasites. The presence of stomach worms is usually indicated by the lack of thrift, sluggishness and a falling off in condition. The color of the skin under the eyelid is usually a certain means of detecting the presence of these parasites. The skin under normal con-

The feeds available on this man's place have not been analyzed, and so we must assume that all the concentrates are to be purchased. If this is the case it is quite likely that the common mill feeds are easily obtained. A ration made up of 4 parts corn meal or 1 part of corn meal, 2 parts of wheat bran, 1 part of clover feed or brewers' grains, and 1 part of cotton seed meal or linseed meal should give good results. The grain should be supplemented with good pasture or hay and a soiling crop. The grain mixture should be fed at the rate of 1 pound of grain for each 3 pounds of milk produced daily. The Holstein bull should be fed a grain ration of 12 to 15 pounds of corn meal or 12 to 15 pounds of cotton seed meal or linseed meal and 1000 pounds of live weight daily in order to get him in good condition for the butcher. In addition, he should have a liberal allowance of hay or pasture. The length of time required to fatten him will depend upon his condition. The corn may be shelled or broken ear corn or corn meal may be used. Mill feeds, as a rule, are too expensive to use as a fattening feed.

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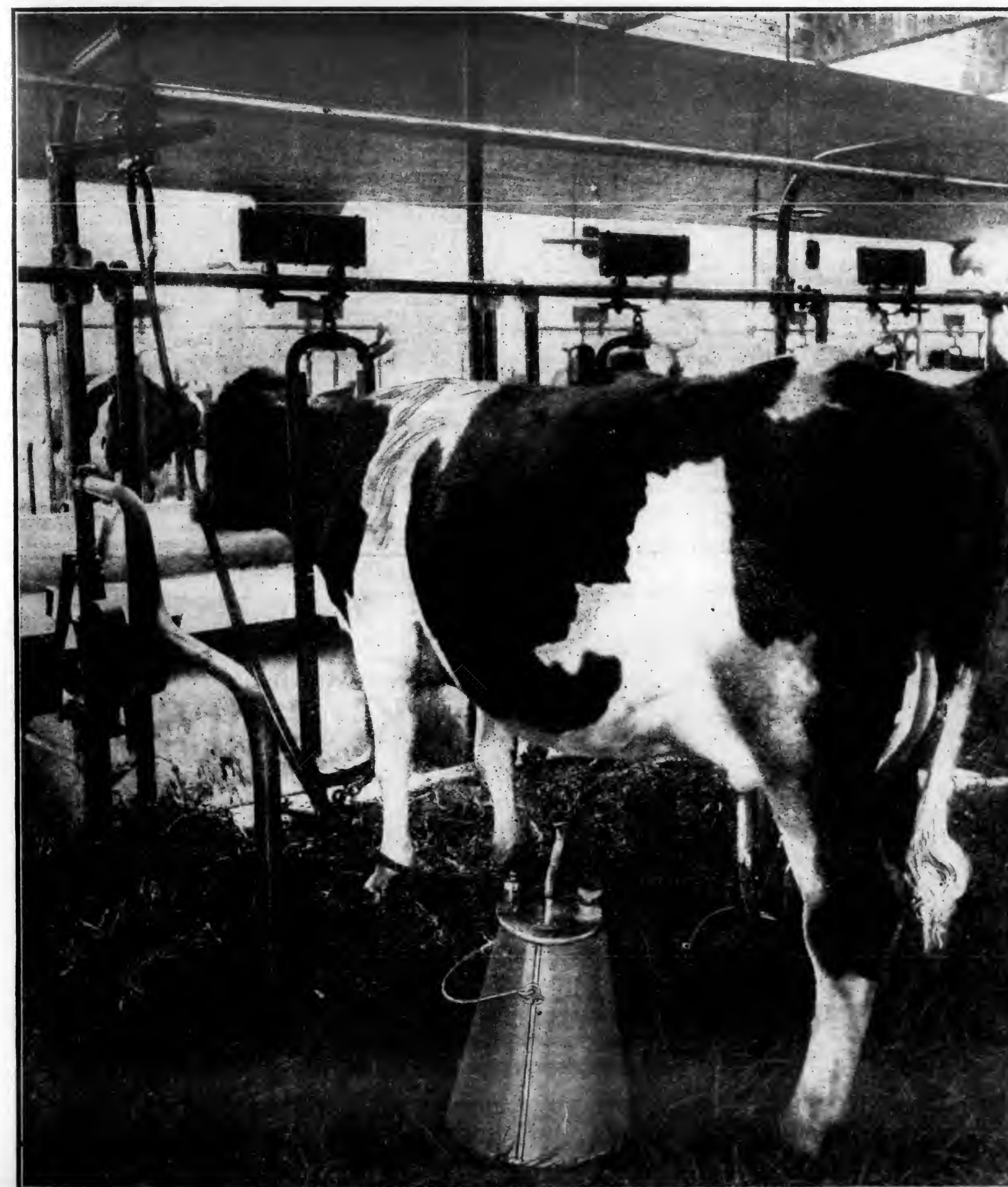
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The Editor's Book Review

Below are comments on some of the more recent books which have come to the editor's desk from their publishers. The modern farmer is a reading farmer of course, and like other business men we believe our farmers are building up libraries by the occasional purchase of books on farm subjects in which they are interested; in no other way can a farmer improve so rapidly or substantially in his chosen calling as by reading the best in farm papers and books and preserving for reference the written accounts of the experiences of others.

For our readers convenience, we will be pleased to furnish at the publishers prices any of the books reviewed below, or any other obtainable books on farming. Further, we will be glad to give suggestions regarding books on any given farm subject on receipt of request with stamp for reply.—The Editor.

THE STANDARD CYCLOPEDIA OF HORTICULTURE, edited by Professor L. H. Bailey. (Macmillan Co., New York. Six volumes, \$36; sold by subscription only. Four volumes now ready.)

Many of our readers have long been familiar with, and owe a debt of gratitude to, Professor Bailey's Cyclopaedia of Horticulture, which was completed in 1902, and has since gone through a number of reprintings and obtained a broad circulation; these will welcome with delight the second edition of the original Cyclopaedia, which is known as The New Standard Cyclopaedia of Horticulture, and is not merely an ordinary revision or corrected edition of the old Cyclopaedia, but a new work from start to finish, with enlarged boundaries geographically and practically.

Probably no other man in America is so well fitted for the task of producing a cyclopaedia of horticulture as Professor Bailey, whose experience has been enormous, and who as a writer on agricultural subjects has no peer in this country. To his aid he has brought the services of about five hundred collaborators, and when to the products of these authorities is added the best of the photographers, engravers, and printers' arts, the result is a wonderful work, complete, authoritative and sumptuous in its setting.

Four of the six volumes which comprise this cyclopaedia are now out, and to the point alphabetically reached in these volumes there are few horticultural questions which this work does not answer and illustrate. The complete work will contain over 3600 pages, more than 4000 text engravings, 24 full page color plates and 96 full page illustrations in black and white.

Many of our readers will admit a desire to own this cyclopaedia and a realization of the benefit it would prove to them in the answering of their most daily questions regarding fruits, vegetables and flowers; but many, we fear, will consider the price, at first glance, as too much to pay from a modest income. We believe, however, that a vast majority of our readers who may feel this way

are wrong in their point of view; the price is reasonable in proportion to the benefit to be derived from a work which is a library in itself, and as an investment will prove profitable, both in the immediate future and in the long run. The publishers offer this cyclopaedia on easy terms of payment, and we recommend it to the serious consideration of such of our readers as are alive to the need of the up-to-date farmer to establish a business library for himself.

WIND AND WEATHER, by L. H. Bailey. (Charles Scribner Sons, New York, \$1 net.)

The wonderful versatility of Professor Bailey is illustrated in this little book of rural poems, for the same man who edited the comprehensive cyclopaedia described above is the author of this clever little volume, which is an accumulation of the verses which he has written from time to time with a direct view to publication, or for special occasion. Such of our readers as have an imagination and the poetry of the broad, open country in their souls will enjoy these verses immensely. Following is a selection which gives an idea of the contents of this little book:

APPLE YEAR.

My last winter apple I ate today.
Shapely and stout in their modelled skins
Securely packed in my cellar bins
Two dozen good kinds of apple-spheres lay.

And today I went to my orchard trees
And picked me the first-ripe yellow fruits
That hung far out on the swinging shoots
In summer suns and the wonder-day breeze.

And thereby it was that the two years met
Deep in the heart of the ripe July
When the wheat was shocked and streams were dry;
And weather of winter stayed with me yet.

For I planted these orchard trees myself
On hillside slopes that belong to me
Where visions are wide and winds are free
That all the round year might come to my shelf.

And there on my shelves the white winter through
Pippin and Newtown, Rambo and Spy,
Greening and Swaar and Spitzenberg lie
With memories tense of sun and the dew.

They bring the great fields and the fence-rows here,

The ground-bird's nest and the cow-bell's stroke
The tent-worm's web and the night-bird's smoke.
And smell of the smartweed through all the year.

They bring me the days when the ground was turned,
When the trees were pruned and tilled and sprayed,
When the sprouts were cut and grafts were made.

When fields were cleaned and the brush-wood piles burned.

And then the full days of the ripe months call
For Jeffers, Dyer and Early Joe
Chenango, Mother, Sweet Bough and Snow.

That hold the pith of high summer and fall.

All asprightly and tart the crisp flesh breaks
And the juices run cordial and fine
Where the odors and acids combine
And lie in the cells till essence awakes.

I taste of the wilds and the blowing rain
And I taste of the frost and the skies;
Condensed they lie in the apple guise
And then escape and restore me again.

So every day all the old years end
And so every day they begin;
So every day the winds come in
And so every day the twelve-months blend.

RURAL CREDITS, by Myron T. Herrick, former Governor of Ohio, and American Ambassador to France. (D. Appleton & Co., New York. \$2.00 net; postage extra.)

The subject of rural credits is one which is freely and eagerly discussed nowadays wherever farmers and business men meet. Mr. Herrick has long been an ardent student of this subject, and his ambassadorship has given him new opportunities for studying it from the standpoint of European countries.

Those who seek information on the history of rural credits up to date will do well to read Ambassador Herrick's book, which describes every known method, institution and system used for solving this question in the various countries of the world. We know of no way by which one may become better acquainted with the whole subject of rural credits than by careful reading of this comprehensive book of 520 pages.

IRRIGATION IN THE UNITED STATES, by Ray Palmer Teale. (D. Appleton & Co., New York. \$1.50 net.)

In the daily and technical press nowadays, we see many advertisements of irrigated lands and irrigation securities; information available for the use

of the intending purchaser has been very scarce, and this book is written with a view to supplying this lack; in it the author discusses climate, water supply, crops, laws, water rights, securities, organization and finances, all from the standpoint of the intending purchaser. Mr. Teale has been connected with the United States Government's investigation of irrigation for many years, and is well fitted for the work he has undertaken. We commend the book to any of our readers who may be interested in irrigation subjects.

Two Pests

ELIZABETH HOOPES, (PA.)

As we rode over the public highways this spring our thoughts were much concerned in regard to two pests, which seem to be claiming but little attention from our brother farmers, and which if allowed to go unchecked will result in much trouble in a few years.

The first of these menaces lies in the numerous caterpillar nests. This species seems to build around the trunks, or in a crotch, preferring a tree with trunk about 8 or 10 inches in diameter; the nests are not more than 8 or 10 feet from the ground, and are scenes of great activity. I have noted dozens of them in a short drive, and see no sign of anything being done to exterminate them.

Can farmers afford to allow this to go neglected? A discarded fertilizer sack, wound tightly around a green pole and fastened with wire and then soaked with kerosene, a few matches and an hour's time would go far toward ridding a farm of this enemy.

The other danger I would call attention to is the wide spread of that great nuisance, wild mustard, which is now making the fields and roadsides a golden sea, but which sows far and wide its seed to make a greatly increased crop another year. Birds, streams and wind spread the seed, and each plant makes a quantity sufficient to seed an acre. Brother farmers, we know help is scarce, wages high and farm work crowding hard, but neglect here means increased trouble, so let us try to pull and destroy every plant on our farm or along the roadside. Two farmers here have fought the enemy. One plowed it down, and the other pulled and destroyed wagon loads.

A TWICE-A-MONTH JOURNAL of practical, every-day experience for, and by, men and women who take their living from the soil.

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Shall We Milk by Hand or Machine?

By A. G. MORRELL

Is the mechanical milker a luxury or a necessity; an added expense or a money saver? This is what the man with ten to twenty cows, the dairyman who lives on the products of his farm, wants to know.

For the farms where dairies are operated for the pleasure of the owners who breed fancy stock, and the

chine one man can milk twenty cows in an hour, with no rushing or hurrying, stripping included. Here we have, at each milking, an hour and a half saved, as it would take the eight-cow man two and a half hours to milk the twenty cows by hand. Counting 300 days as a year, by way of allowance for dry cows, illness or change in the number of the herd due to sales or death, we have, with 600 milkings, a saving of 900 hours in the year, which means 90 10-hour days or 75 12-hour days. This saving of time is real, not a manufacturer's statement, for I have seen the milking of 20 cows done in less than an hour by one man, on several farms, and have had the owners tell me of the great difference in the hours of labor in the barn since the hand milking was abandoned. To give a concrete instance, on Strawberry Hill Farm, near Poughkeepsie, N. Y., the Underhill Brothers have a dairy where one man milks his twenty Jerseys by machine in an hour, and then washes all the bottles and cans and dairy utensils be-

and his one or two sons to handle the situation with entire satisfaction to themselves and at a saving in money besides. Machine milking is most certainly more rapid than hand milking—that is practically self-evident; and it is enough faster to save valuable hours which may be employed in other work or used in rest or pleasure, or divided among the three.

To the person who looks on, milking seems easy—but it isn't. It is hard work—muscle tiring, back straining, finger cramping work, to sit on a milking stool in a necessarily unnatural position for one or two hours twice every day in the year. The mechanical milker, taking the place of the man, is a labor saver for the individual as well as the whole dairy because it does away with this tiresome drudgery. To attach the teat cups to each cow's udder and start the machine is a moment's work; the transfer from cow to cow is simple, and the changing of the pails as emptied entails no more work than changing pails in hand milking. The cleansing of the few portions of the milker which the milk comes in contact with is not difficult, and if it is always done after each milking there will be no trouble. Surely any farmer will admit that by the elimination of even one man in the barn there is a saving of labor, not only in the dairy work, but in the house, where the wife has that much less cooking to do every day. When help is needed in the field work it can be hired for the season's work and dismissed. In the barn the milking machine renders you independent, winter or summer. As to the actual money saving, the evidence is all favorable.

Take the man who has fifteen cows, or twenty. In a good many years of traveling about the country, visiting dairies, I have seen few where one man did all the work, milking, cleaning up the stable, caring for the calves, feeding the herd, hauling the milk, etc. He generally has to have one man, sometimes two, if he raises his own stock and grows his roughage and



The Milking Machine Installation at Strawberry Hill Farm

cost of operation need not be counted, there are high-priced milkers made with many highly finished parts of expensive brass, and copper, and German silver, which while exceedingly efficient, are also costly. These machines we need not consider, as economy in cost, and especially first cost, is what we need to study.

However, there are also milking machines which, while perfectly practical, simple in construction and satisfactory in their results, are not too high in price for the man who must cut corners in his financial venturing; and which prove real time, labor and money savers and help to take the "grind" out of the work in the dairy barn. Because one article is lower in price than another is not a good reason to assume that it must be inferior in quality or inadequate in service. Simplicity of construction, fewer parts, less expensive manufacturing plants, all tend to lower the cost of manufacturing any piece of machinery, without necessary loss of quality. This is the case with the making of milkers. Fine drawn brass, copper and German silver—all are expensive and need high skilled men to handle the machinery that cuts and grinds and rolls and polishes; expert workmen to put delicately adjusted parts together, and the ultimate user always pays the cost of manufacture, plus profit. There are good milkers which are high priced, but there are also lower priced machines which are just as good, and among those the farmer of moderate means may find one to suit his purse.

To say to the dairy farmer that the mechanical milker is a labor, time and money saver is a simple matter; but to have him believe that the statement is true is not so easy, unless we can give him proof that his intelligence will allow him to admit as conclusive. Such proof is to be had among those who have used milkers and have found them quite satisfactory in their working, in their time saving, and in their economy.

Take first the question of saving time. An extra good man can milk ten cows an hour, if he has the inclination to work steadily and conscientiously; but a fair average is eight. With a two unit milking ma-

chine the milkings are so quickly done that he has plenty of time to do what would require the time of another man if the cows were hand milked. Another dairyman in Kenwood, N. Y., had fifteen head and used three units, milking the herd in 42 minutes. The year he bought the milker he had a helper, which accounts for the three units (a unit is a pail with its attachments complete to milk). After a short time he found he did not need the man, as he could milk the cows himself and do all the barn work besides. If he milked the cows by hand it took him two hours, and sometimes more; or when he had the extra man it usually took them nearly an hour each. Here we have the time of one man saved in a small dairy where that made a considerable difference to the owner in the course of a year. At this farm the owner's wife showed me, with much pride and gratitude for her husband's thoughtfulness, how the little gas engine, bought to run the milker, ran her washing machine.

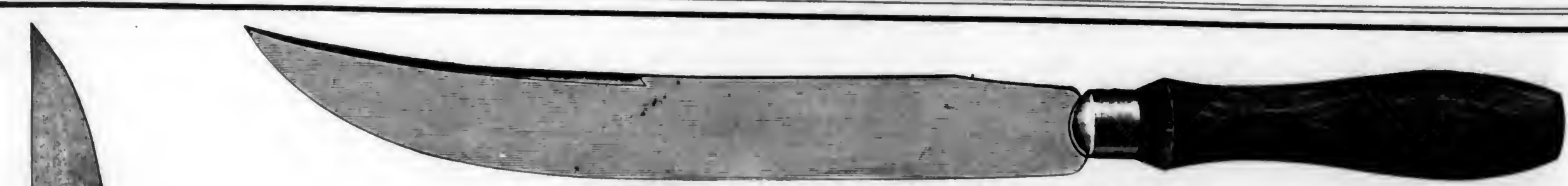
Space will not permit of giving many instances of this kind with which I am familiar, where the farmers have told me of barn help cut from five to two men, from four to two, from six to three, etc. But they are to be found all over the country, and many a farm has solved the tiresome, annoying and often serious problem of adequate help in the barn by letting their men go and putting in a milker, which enabled the farmer



Milking Machines in a Wisconsin Dairy Barn

some of his grain. That the mechanical milker will cut out one man is beyond dispute. Figuring his wages, including board, at only \$40 a month, there is an immediate saving of \$480 per year. Of course, in a large herd of 30, 35 or 40 head, the stable force can

(Concluded on page 254)



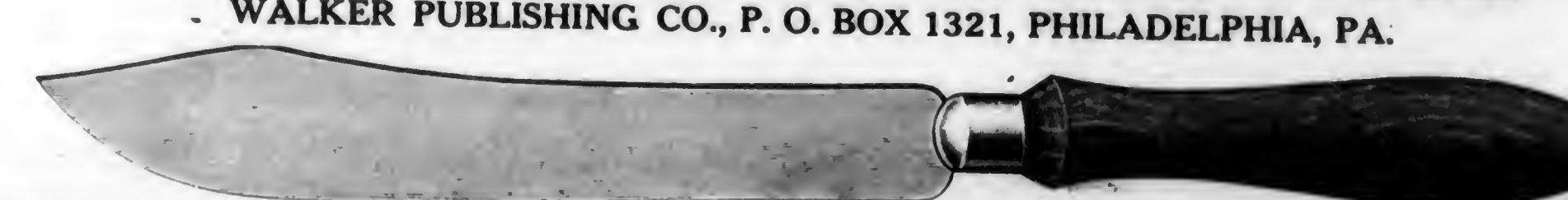
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JUNE 15, 1916

Look Out for the Hay Crop

THE spring has been backward and variable. In some sections the weather has been very dry and in others favorable. But from all accounts the hay crop in general promises to be rather a short one. Hence it will be well to look after forage of the summer-growing legume crops. The soy, or soja, beans can be grown in all parts of our territory, and in the greater part the cowpeas can be used successfully. A dairyman in Dauphin Co., Pennsylvania, says that he makes and uses cowpea hay successfully every year, but hay from the southern cowpea will hardly be made well much farther north or in the mountain country west of Dauphin Co. But where the earlier varieties of the cowpea thrive a mixture of equal parts of soy beans and cowpeas will make the finest of hay. Both of these can be sown any time in June and mature a crop in southeastern Pennsylvania and New Jersey and Delaware. But it will be well to select varieties that mature nearly together. The Ito San soy bean or the Medium Early Green will do very well to sow with the Whippoorwill cowpea. The upright-growing soy will hold up the peas and make the harvesting easier and will also make the crop more easily cured. Cure the crop mainly in cocks and barn like red clover hay, though it takes a little longer exposure in the cocks than clover. But get it into the barn while rather limp to save the leaves, and it will cure all right in the barn.

Where it is hardly practicable to use cowpeas as hay, they make a splendid means for tiding the pastures over a summer drought. Cowpeas pastured before blooming will quickly make a second growth if the stock is taken off after eating them down. The writer has pastured down peas three times before they gave up entirely. Of course, the same caution must be used as with clover, by not turning hungry cattle on them and letting them fill up in a hurry, and get bloated. Pasture a little while at first and always after feeding, and there will soon be no trouble.

"A Silo on Every Farm"

THERE has been a rapid increase during the past few years in the number of silos that have been built upon eastern farms. There are not enough, however, to meet the needs of the farmers who intend to keep live stock. A number of years ago it was thought that the only farmer in need of a silo was the dairyman who required the succulent feed to improve the ration for his cows. A better knowledge of how to grow the corn crop has improved the quality of silage produced and resulted in an increased use of silage. Recent tests at experiment stations have demonstrated that silage is not only valuable as a feed for dairy cattle, but that it is necessary in economical beef and mutton production, and that it can be used to advantage as a feed for horses. Silage not only

makes economical reduction possible, but it also fortifies the dairyman against a shortage of pasture or severe droughts. The silo can be relied upon to supply a valuable feed at any time of the year if it is properly constructed and filled to meet the requirements of the herd. Corn silage will keep from one year to another, so that it is a desirable practice to put up more silage than is actually needed to feed the live stock on the farm during the winter.

The type of silo to build must be determined by each individual. There are a number of different makes of silos, nearly all of which have been tested long enough to demonstrate that they are practical. The difference in the cost of materials very often determines the type of silo to build. Silage will keep well in any silo if it is well built. In constructing a silo it is important to put it on a substantial foundation to keep the wall from cracking. The walls should be airtight and smooth, so that the silage will not spoil.

There are so many advantages in having a silo on the place that it would pay the average farmer to borrow the money to build one. There is no building in which a larger amount of feed can be stored in the same space, or where it will keep in better condition. Farmers who do not have a silo will do well to investigate the value of having one on the place. We eastern farmers will do well to join the Middle West movement for "a silo on every farm."

A Good Roads Pork Barrel

THE good roads bill which passed the National House of Representatives some time ago has been amended and passed by the Senate, and is now in conference or submitted to the President for his approval.

The bill, as amended by the Senate, carries an appropriation of \$85,000,000, spread over the next five years, to be apportioned to the states on the basis of their population, with no restrictions as to how or where it shall be expended. As the bill stands, as passed by the Senate, it is mostly "pork," and we have little hopes of its being of much use in either the construction or maintenance of good roads where they are most needed.

When the bill was introduced we said that any appropriation by the National Government for road purposes ought to be expended on the roads upon which rural mail routes had been or might be established—where the money would do the most good, and where it was most needed. There is no provision in this bill limiting the expenditure of that money to that purpose.

The daily papers, or most of them, in the large cities, are obsessed with the idea that if the National Government goes into the road making business as provided in the bill, it should build trunk roads between prominent points; one daily advocates the building by the Government of three trunk roads from east to west, and three from north to south, across the United States, having the different states build other trunk roads to connect with these proposed six national highways. It is needless to say that the country dirt roads would be left out in the cold by any such system, and it ought to be needless to say that such a scheme would be throwing away good money on a bad proposition.

The crying need of good roads is in the country districts, to enable the products of the farms to reach the nearest marketing and distributing centers as cheaply and quickly as possible—and also to give the farmers and their families convenient access to such points.

At the recent Bankers' Convention of Pennsylvania, held in this city, one of the delegates said that the question of good roads in the country districts was becoming of more and more importance to the banks in the interior of the state. He said that the country roads had an important influence on the financial standing and resources of such banks. In seasons of muddy roads and bad hauling notes given by farmers were not paid, but had to be renewed. When the roads dried up and the going was good the farmers' notes were promptly paid. In the one case the farmers could not market their products and in the other case they could and did. And for this reason the country banks were vitally interested, not in the "runk highways between the large cities, but in the common dirt roads which branched out into the farming districts from the country bank centers.

When the bill was under discussion in the Senate, Senator Swanson, of Virginia, explained that the real reason for the bill was the improvement of the roads in the rural communities. He said: "This bill is not intended to build fine boulevards and roads

around the large cities. It is for the people in the country." If such is the intention of the measure it should be safeguarded to accomplish that end. A plain provision should have been included that the money is to be expended on the rural route roads, which form at present the most complete system there is by which to reach the farmers in the outlying districts which do not now have any road system worthy of the name.

The true method, as we have before said, is to provide a system of roads radiating out from the steam railroad and trolley stations, bringing the farms into convenient and direct communication with such centers, and systematically improving such roads. At present the roads upon which rural mail routes have been established provide the best substitute for such a system, and should absorb whatever money the nation and states have to give to the building and maintenance of the highways of the country.

A good roads pork barrel ought to be more popular with the average Congressman than either the river and harbor or the public buildings pork barrels. Not every member has a river or harbor in his district that he can place under the protecting wings of the United States treasury, but nine-tenths or more of the members have roads galore in their districts which need the lubricating influences of Uncle Sam's bottomless treasure lodge.

Growth in Dairy Production

THE Bureau of the Census in the Federal Department of Commerce has just issued a summary of the general results of the 1914 census of manufactures for the butter, cheese and condensed milk industries of the United States, which is especially interesting when compared with the census of five years previous (1909). While only 7982 establishments were included in the returns for 1914 as against 8346 in 1909, this smaller number turned out a product exceeding that of 1909 by \$95,000,000, or nearly 35 per cent. This would seem to indicate the disappearance of a number of the smaller plants and an increase in the prosperity of the larger ones. The production of butter (exclusive of butter made on farms) in 1914 was 786,013,489 pounds, an increase of more than 25 per cent. over 1909; over 21 per cent. more cheese was produced in 1914 than in 1909, while the increase in condensed and evaporated milk in the same period was over 78 per cent.

One of the most interesting and significant features of the report is the fact that the quantity of milk consumed by factories in the manufacture of dairy products actually decreased nearly 15 per cent. from 1909 to 1914, while the quantity of cream purchased as such for use in the industry increased nearly 70 per cent. Thus we see evidence of the increase in the use of the separator on the farm, and a step toward the realization of the farmer's highest aim, the selling of as nearly as possible a finished product, with an economical utilization of all by-products. Good, fresh, sweet skim milk is too valuable a by-product to be thrown away.

Bulletin Helps for Farmers

"An Economic Study of the Farm Tractor in the Corn Belt," is the subject of Farmers' Bulletin No. 731, issued by the U. S. Department of Agriculture. We suggest that our eastern farmers send for this bulletin and study the experience of our middle western brothers, with a view to gaining an idea as to how tractors may be used to best advantage on eastern farms. The tractor is gradually working its way all over the country, and we eastern farmers cannot afford to miss its advantages if we can apply them to our own farms.

Another very recent issue in this same Farmers' Bulletin Series is No. 731, "The True Army Worm and its Control." We are told that "generally speaking, outbreaks of the true army worm are more common following cold, backward springs," and since throughout the East the present season answers that description, our farmers will do well to start a "preparedness" campaign against the possible invasion of this pest by sending for this bulletin and studying it.

An interesting and instructive pamphlet on "Implement Sheds," written by K. J. T. Ekblaw, of the Agricultural College faculty of the University of Illinois, is issued by the National Lumber Manufacturers Association (Chicago), which offers the pamphlet free on application; working drawings and instructions for the construction of the various types of implement sheds are given, and useful information as to the floor space and height of space required to house common farm implements is incorporated in the pamphlet.

The Telephone on the Farm

By ALFRED E. WALLER

New and wonderful developments in the field of telephone engineering have followed each other in rapid succession during the past few months, and have aroused a great deal of popular interest. Only a short time ago we were thrilled to learn that the transcontinental line was an accomplished fact. Think what that means—to be in New York and talk with some one in San Francisco—right across a great continent that the fast trains take five days to traverse. There is wonder enough in that accomplishment, but it is rendered insignificant by the later news that spoken words have been transmitted wirelessly from Washington to Honolulu!

With these remarkable achievements in mind, it is hard to realize that a humble relative of the long distance telephone is one of the most useful devices which can be included in the equipment of a modern farm. The apparatus used for transmitting telephone messages over long distances is, of course, expensive and often very complicated. Short range telephones, on the other hand, are simple, inexpensive and wonderfully convenient.

It is our purpose in this article to explain the elementary principles of the simplest form of telephone. In order to understand the exact process by which speech is transmitted from point to point by means of the telephone, we must first have in mind a clear idea of what sound is. Sound is a succession of waves or vibrations set up in the air by whatever is making the sound. If these waves strike some body which vibrates easily, they will impart a motion to it, and cause it to move to and fro in unison with their own beat. This principle is admirably illustrated by the action of the tin can and string telephone with which most boys are familiar. For the benefit of those who have never made a telephone of this kind, it may be described as follows: Two tin cans, preferably of the same size and kind, are fastened together by means of a strong string, tied through small holes punched in the bottoms. The holes should be as near as possible to the middle of the bottom for best results, should be not over one-half inch apart, and should be no larger than is necessary to let the string through freely. When the cans are held so that the string is pulled tight between them and does not touch anything, words spoken in one can may be distinctly heard at the other can. The reason for this is that the voice of the person speaking sets up waves or vibrations in the air. These waves, striking against the thin bottom of the can into which they are spoken, cause it to vibrate back and forth like a drumhead. The connecting string pulls the bottom of the other can back and forth in a similar manner and it therefore makes little waves in the air, just like those which set the bottom of the first can in motion.

The theory of this simple device, which is the same in principle as the regular telephone, may be stated briefly thus: Sounds which cause a metal diaphragm to vibrate in a certain manner may be reproduced by causing another similar diaphragm to vibrate in the same manner. This is accomplished in the regular electric telephone by means of magnets. Let us see how.

Figure 1 shows the effect produced by laying a paper over an ordinary horseshoe magnet and sprinkling it with iron filings. The filings arrange themselves along the invisible lines of magnetic force and allow us to get an idea of their position and number. Figure 2 shows what happens when a small bar of

iron is placed near the ends, or poles, as they are called, of the magnet. In Figure 3 the magnet is shown with the bar moved up a little closer. Notice that the nearer the bar comes to the end of the magnet the greater is the number of lines of force at each pole of the magnet. The relative positions of the magnet and the bar are clearly shown by the arrangement of the iron filings. Directly over the bar and the magnet are little areas practically free from the iron particles. The position of these particles in the space around the magnet shows the position of the lines of force which radiate out in every direction. These are "leakage" lines; only those which pass from the poles to the keeper are useful in lifting or attracting it. Bearing this

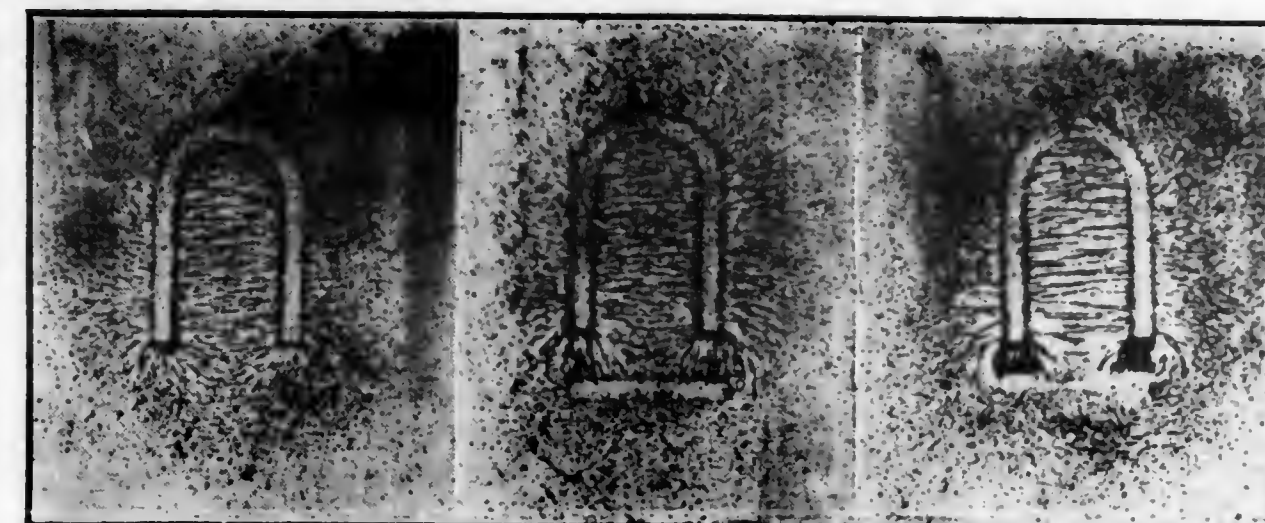


Fig. 1

Fig. 2

Fig. 3

fact in mind, it will be seen that with the keeper close to the poles the strength of the magnet is much increased.

It is not hard to imagine that if the bar is moved to and fro just in front of the magnet the lines of force will increase and diminish as the bar moves nearer, or farther away. This is, in fact, exactly what does happen.

At this point we shall have to ask you to take our word for it that when a coil of wire is wound around the middle of the magnet, as shown in Fig. 5, and the magnetism is caused to vary by moving

it as shown in Figs. 2 and 3; the change in magnetism sets up little pulsating electric currents in the coil of wire around the magnet and these little currents, flowing around through the other coil, vary the strength of the other magnet. It is easy to see that varying the pull of the other magnet will make the other diaphragm vibrate just like the first one, with the result that it will give off sound waves just like the waves which struck the first diaphragm.

The process of transmitting sound as described above seems rather tedious. As a matter of fact, however, it takes only an exceedingly small fraction of a second—no matter what kind of a telephone you use, it will transmit sound many thousand times faster than you can talk. Almost any one but a desperate case of stutter or a mute can talk a great deal faster than he can walk, and conse-

quently it is in the role of time and trouble saver that a telephone makes a hit with a farmer.

It is not an easy matter to give a comprehensive idea of the cost of installing telephones on a farm, because it is seldom that the same outfit would be used by two individuals. Different farms require different lengths of wire, different arrangement of poles and, perhaps, different types of telephones. For this reason any data given in a specific case must be considered as a means of comparison only, in other cases. The mar-

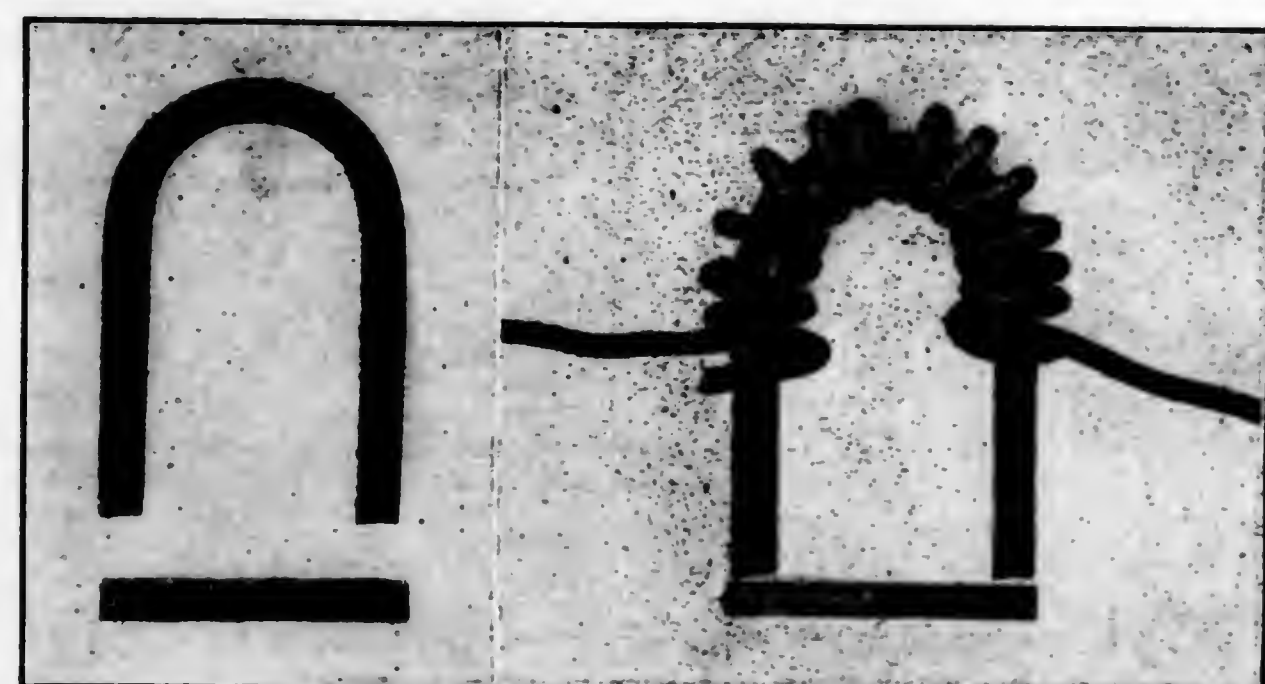


Fig. 4

Fig. 5

ket prices of such materials as wire, poles, insulators, etc., vary and are different in different locations.

Important factors in determining costs are, for instance, the length of the line. Leaving out for the moment any cost item which refers to the greater number of poles or greater amount of wire necessary for long lines as compared with short ones, it is evident that more powerful instruments are needed to secure good communication, as the distance covered increases. In some cases it is possible also to get good results with what is known as a single wire, or "grounded" line. In this type of installation only one wire is strung on the poles, instead of two, and the earth is used to form one side of the electric circuit. The only virtue of the single wire line is cheapness, and, as the saving effected by using one wire instead of two is relatively small, the single wire line

is seldom to be recommended. It is not as quiet and reliable as the two-wire line and should never be used near electric light or power circuits.

The following tables give a fair approximation of the cost of the best type two-wire lines, with working range of ten miles or less. Two or more farms with systems of this kind joining their various buildings may be connected together, if desired, thus making a two or more family local telephone system. The prices quoted are taken from the catalogue of a large company which manufactures telephone apparatus, and were correct when the list was compiled. They should hold good, with only slight variations for some time.

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COST PER MILE. TWO-WIRE METALLIC LINES.

6 oak brackets, 12 in. long, painted... \$ 1.05
60 pony glass insulators No. 9... 1.04
330 lbs. No. 12 BB telephone wire... 11.55
9 lbs. wire nails... .27

Total cost per mile (less poles) about... \$13.91

The cost of poles is not included, because it is generally possible to get native poles at small cost. This disposes of the line and the total cost per wall telephone can be estimated in the same manner.

COST OF MATERIAL FOR EACH WALL TELEPHONE STATION.

1 5-bar 1000 ohm wall telephone, complete with composition receiver, transmitter, induction coil, 2 high grade dry batteries and 4 mounting screws, ready to install on the wall. (No arrester on telephone)... \$10.12
1 lightning arrester with switch (No. 400) with No. 8 wood screws 2 inches long for mounting... .40
20 ft. No. 19 single wire, rubber covered and braided (for connecting arrester and grounded rod)... .09
20 ft. No. 19 twisted pair wire, rubber covered and braided (for connecting arrester and telephone)... .17
1 ground rod, 6 feet long... .20
4 porcelain knobs, No. 4 size (for attaching ground wire to outside of building)... .05
4 wood screws, 2 inches long... .02
1 flat head iron (for fastening knobs to house)... .02
3 porcelain tubes, 8 inches long (for holes where wires enter house. If single wire line, only 2 are necessary)... .12
14 millonite nails, No. 18 (for fastening to the wall, the wire extending from arrester to telephone)... .02

Total cost for wall telephone station (about)... \$11.19

The cost of a four station system, with a total of two miles of line wire, would be:

4 wall telephone stations @ \$11.19... \$44.76

2 miles outside line @ \$13.91... 27.82

\$72.58

This equipment is more than would be required ordinarily, and may be replaced by a much simpler and cheaper set if only short distances are to be covered and few stations are necessary. The manufacturers of telephone apparatus are always ready to assist a prospective customer by furnishing prices, drawings and advice—part of their business is to work out each individual problem in the most economical and satisfactory manner possible. It is desirable for this reason that inquiries should be as explicit as possible—should state how many stations are needed, where they will be located and how far apart. A rough map with the distances between stations indicated is often a great help—it prevents misunderstandings and enables the farmer and the supply man to cooperate with mutual advantage.

Sweet Milk for Calves

While it is desirable to feed calves skim milk it is very important that the milk be in a clean, sweet condition. Digestive troubles often result, according to the Pennsylvania State College Agricultural Experiment Station, from feeding sour or partly sour milk. A uniformly sweet product from day to day is essential. Instances are on record in which butter milk has been fed successfully to calves. The practice of feeding butter milk or sour milk at one feed and sweet milk at the next, however, is not generally advised.

THE GARDEN

All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

Edited by W. F. MASSEY

The Summer Garden

In the greater part of the area in which The Practical Farmer circulates parsnips and salsify are among the earliest crops planted. Down here in the southeastern corner of Maryland and southward I have found that June is the best time to sow these seeds. In our longer growing season parsnips sown early get overgrown and somewhat woody, while sown late, though not getting quite so large, perhaps, they are of far better quality. Salsify, too, if sown too early, sometimes runs to seed and that means inferior roots. This note is for those in similar climate only, for in Pennsylvania the early sowing is best.

Keep up sowing of string beans as fast as a previous sowing is above ground. Here we do this until August, merely sowing enough for use while good, and that means, in my family, a single row 40 feet long at each planting. Between the rows of the early sugar corn I plant early in June a row of the Fordhook bush lima beans, for the early corn will be used by the time the beans need all the sunshine, and is pulled up by the roots to leave no stumps in the way of cultivating the beans.

Succession plantings of sugar corn are made after the early garden peas are done, and the pea vines are not removed from the land but buried beneath the corn rows. In fact, all the refuse after the gathering of the crops I try to bury in the soil to increase the humus content.

Chard planted in May will now be coming in to take the place of spinach. I sow a single row 40 feet long and as soon as the leaves are as large as ordinary spinach I thin out the plants to 4 inches apart and use the thinnings as greens. If you have never grown chard I would suggest that it may still be had of small size before frost. The plants thinned out grow almost to the size of rhubarb, and we pull the leaves just as we do rhubarb, cook the leaf blades for spinach and the white leaf stalks like asparagus and have two fine dishes from the one plant. The Lucullus variety is the best.

One of the chief things now is to keep the garden clean of weeds, and not only that, but constantly keep the soil stirred shallowly to maintain the moisture and prevent rapid evaporation in dry weather. Never allow a crust to remain between the rows, but stir the soil as soon as practicable after every rain.

Sow seed now of the late cabbages to set after some other crop comes off. In this section the first of July is time enough to start the winter cabbages. In early June my plants for the late fall cabbages are just above the ground. These are of the Early Flat Dutch and the Copenhagen Market. This will come in for early and late fall, while the winter cabbages I do not care to have headed here until late November.

I find that it pays, for early tomatoes, to train them to single stems and tie to stakes. This demands constant going over to tie up and especially to keep the suckers pinched off that continually appear in the axils of the leaves. When the plants get to the top of a 6-foot stake I nip out the stems and stop them. When the best of the early tomatoes are over I prefer to take out the plants for some other crop, and have later varieties coming in. Now is the time to set these. I am this season making a test of the difference between the plants

trained to stakes and those left to tumble on the ground. I have an equal number of each side by side, and will note the difference in the crop, not only in earliness but in yield. I am growing, this season, only two early varieties, the Langdon Earliana and Bonny Best. For the later crop I have plants coming on of Red Rock, Bonny Best, Mississippi Girl and Success.

In late June I like to sow a few turnips of the White French. This variety is allied to the ruta baga class and demands a longer season than the flat turnips; it is one of the best and sweetest of the turnip family, but I have been bothered to get the seed, for it seems to have almost gone out of the trade.

If summer varieties of radish are in demand they may still be sown. The long white Icicle radish is one of the best and the Chertier is also good. Late July is early enough to sow the fall radishes.

Stop the cutting of asparagus shoots now. Give the rows a good fertilization and keep cleanly cultivated until frost, for now is the time to get a strong growth of the crowns to make big shoots next spring. The cutting of the rhubarb, too, should be stopped and the bed well manured. Then if the plants have occupied their present position for three or four years it will be better in the late fall after frost to dig them up, divide the roots and replant in a fresh spot and mulch heavily with manure for winter.

Spraying the early corn with lead arsenate will prevent many of the boll worms getting in. The poison will only get on the silks and will not damage the ears, but will damage the moths.

Spray the tomato plants regularly with Bordeaux mixture to prevent the leaf blight every ten days until the fruit is nearly grown. Spray the eggplants also with lead arsenate, 1 pound to 30 gallons of water, using the paste form of the arsenate, for the potato beetles are as fond of the eggplants as they are of potatoes. Use the same spray on Irish potatoes. When the vines of sweet potatoes cover the ground let them alone and do not, as some advise, keep them pulled loose from the ground; good, healthy vines are essential to potato making, and if the plants have plenty of acid phosphate it matters little how rank the tops grow.

In the flower garden I take up the bulbs of hyacinths, tulips and narcissus when mature, and cure them for replanting in the fall. Then, having a lot of China asters grown from seed sown in the open ground in April I set the beds in these for late bloom, which is always better than the early bloom.

Keep the dahlias to one stem and tie them up to stakes to prevent the wind blowing them over. Cut out the flower stalks of the cannas as soon as the flowers fade and keep up the later growth.

A Garden Fence

I had for years a fence around my garden, with wooden posts, which rotted off. I determined to put a permanent fence there, and have now completed it. This fence is of woven wire, chicken-tight, and attached to steel posts set in concrete. Next to the street it is of a more ornamental character. This not only makes a more permanent fence, but a useful trellis for many things. One line 115 feet long is now planted with lima beans. These will ornament the

fence and save unsightly poles and will save room in the garden, too. Another line 150 feet long is planted to raspberries and dewberries. Then near the dwelling I have Hyacinth beans planted to run on the fence, and one short space has Champion of England peas supported by the fence. In this way the lines of the fence become ornamental and at the same time give me rows of vegetables, fruit and flowers without taking any room in the main garden. The only stakes that show in the garden are neat sawed stakes set to the early tomato plants, which will be trained to single stems and tied to the poles. In the making and cultivation of a garden the getting of every spot into use is important. The only space in my garden unoccupied by plant growth is the compost heap in an out-of-the-way spot. This is an essential feature in the garden, for I never allow any vegetable refuse to be wasted; it all goes on the compost pile to rot down and be returned to the garden next season. Then, too, I make a separate pile for the production of compost for the flower pots in the greenhouse. This is made of grass sods piled grass side down and each layer covered with stable manure. The pile is built up square and flat. Then later it is chopped down from top to bottom and re-filled in the same form, and in the fall is again turned and mixed, so that in the winter and spring I have plenty of potting soil of the best character, to which I add some bone dust in preparing for plants.

Tobacco Fertilizers

Fertilizers for tobacco should be guaranteed free from chlorine, say Pennsylvania State College Agricultural Experiment Station authorities. The same authorities advise growers to use as a guide in selecting such fertilizers the State fertilizer bulletin, a copy of which may be had by writing to the State Department of Agriculture, Harrisburg, Pa. The bulletin in question contains the results of fertilizer analyses conducted under the inspection service of the State.

Queries Answered

Preserving Corn and Tomatoes.—C. M. Missouri, writes: "How can tomatoes be kept fresh and whole after the growing season is over? Can they be put in a barrel and covered with brine? In what state of ripeness should they be picked for this process? Can sweet corn on the cob be preserved in a brine? Please tell how it can be done?"

The only way to keep ripe tomatoes is to can them. Any well grown green tomatoes can be pulled when frost comes and wrapped in paper and packed in crates and placed in a cool place where they will be protected from frost and a few can be brought in from time to time to ripen in a warm room, and you can have sliced tomatoes for some time. You do not need any brine. Sweet corn on the cob can be kept in brine, and so can string beans. They are taken out and soaked in fresh water over night. Make a brine strong enough to float a fresh egg. Put the brine in a cask and put weights on to keep the corn under the brine. Both the corn and the beans will be better canned. We can them and also summer squashes and eggplants and have them as good as fresh ones. I had squashes recently for dinner that no one could tell from fresh ones out of the garden.

Ants in Bee Hives.—A. L. L., Pennsylvania, writes: "We have a number of bee hives and one of them has ants; what can we do to keep them out and get rid of them?"

Ants that trouble bee hives usually have their holes or hills near the hives in which the bees are kept. These should be located and the ants destroyed. A common method of destroying ants is to pour hot carbolic acid into the holes. This chemical is very high in price at the present time, so that it makes an expensive method of eradication. Carbon bisulphide may be used in the same way and is regarded as being equally as good as the carbolic acid.

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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

Cowpeas as an Emergency Crop

It is not too late to sow cowpeas for hay. On farms where hay is likely to be scarce, or where, on account of the lateness of the season a portion of the land intended for corn has not been planted, cowpeas may be grown to good advantage. As far north as the latitude of Philadelphia any of the commercial varieties of peas may be expected to mature sufficiently for hay if planted by the 20th of June. Farther south they may be planted as late as July 1st. Cowpea hay is an excellent feed, although hardly so rich in protein as alfalfa and soy beans, yet it is especially palatable to stock and they eat it greedily. Cowpeas take more kindly to sandy or sandy loam soil than to the heavier lands, although good results may be secured on most soils if well drained.

The land should be prepared as for corn, with a little more attention to getting a fine seedbed than for corn. If grown for hay the peas may be seeded at the rate of 6 pecks per acre with an ordinary grain drill. In this case it will be necessary to feed the beans through the drill from the oats and barley side of the hopper. If the ground is in excellent condition—capable of producing 60 bushels of corn per acre, no fertilizer need be used. On thinner land an application of 200 pounds per acre of acid

phosphate will be of decided benefit. The seed should be of prime quality, so that the stand will be perfectly uniform. A uniform stand covers the ground so completely, as the plant develops, that weeds are completely smothered out. Unless the land is very free from weeds an uneven stand will result in weedy hay. If cowpeas have not been grown on the field recently it is well to inoculate the seed. Commercial cultures can be procured from most of the seed houses. The seeding should be made in the same manner as oats, planting at a depth of one inch in heavy soils and an inch and a half in sandy ground. No attention is given to the crop until time of cutting. When a few of the pods have become dry the peas are ready to harvest for hay.

The varieties best suited for hay production are Whippoorwill, Gray Crowder and New Era. The latter does not make as much growth as the others, but matures in a shorter time. It is better adapted for late planting than the others. The residual effect of cowpeas on the soil is very favorable. Wheat following cowpeas is greatly increased in yield. In many localities it is the practice to have cowpeas precede the wheat in the rotation.

Quite often cowpeas are seeded with millet for a hay crop. The objection to

this combination is that the cowpeas do not mature quite as early as the millet, and cutting when the latter is at the proper stage of maturity is too early for the cowpeas. The common variety of millet is preferred to the Hungarian or the German millets for seeding with cowpeas, as it matures somewhat earlier.

How to Eradicate Quack Grass

Undoubtedly quack grass is one of the most persistent of the perennial weeds in our Northern States. Various methods have been suggested for eradicating it and used with varying success. Since the plant is reproduced both by seed and underground root stocks extra care is required in combating this weed. The following are some of the methods that have been used:

The Crop Method.—The land is put into as good a state of tillage as possible and sown thickly with millet, sorghum or buckwheat. While this method does not destroy the roots of the quack grass it has the effect of reducing their vitality to a large extent. The land should be plowed as soon as the crop is removed, and the roots of the quack grass exposed to the sun. A rather shallow plowing is best in this case. This operation will generally take place rather late in the summer, and if dry weather accompanies the plowing, a few harrowings will drag out most of the roots and they will be killed by drying.

A second method is that used by German farmers in the Middle Western States. The field is plowed, harrowed and as many of the grass roots as can be seen are gathered, dried and burned. They give the field clean culture

throughout the remainder of the season. The process is expensive, but thorough.

Another method is that of summer fallow. The land is plowed in the spring, disked and kept clean by harrowing at least once a week during the entire season. This method will eradicate the grass but it means the loss of a crop that season, to say nothing of the extra labor.

The Office of Farm Management of the U. S. Department of Agriculture suggests the following method, which may be applicable in many cases: "If the quack grass sod be left undisturbed, as it would be in the case of a meadow or pasture, for two years, the grass meanwhile being cut for hay or kept down by pasturing, all of the deep lying root-stocks decay, and the new ones that form are all within 2 or 2 1/2 inches of the surface. After this condition has been brought about, if the field is plowed just deep enough to turn up all of the root stocks, which will usually be 2 to 2 1/2 inches, the grass is very easy to kill. This plowing should be done in midsummer after haying time. A few harrowings after this shallow plowing completely destroys the quack grass unless it happens to be a very wet season, when the roots are kept alive by moisture. It is of the greatest importance not to plow deeper than necessary in this work. If one plows, say 4 inches deep, then the root stocks must be harrowed out from the depth or they will take root and grow again. If the plowing is only 2 inches deep the frequent harrowings keep the root stocks from connecting with the subsoil until they have perished."

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Great care in selecting beef scrap should be exercised; diseases of an uncontrollable nature, ptomaine poisoning can be quickly brought about through tainted beef scrap. Ordinarily a tablespoonful of beef scrap dropped into

What We Are Asked

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\$1600 buys my 40 acre farm, 6 room dwelling, good soil. Good water. My husband is blind of selling. **MARY C. KINZINGER, R. 1, North E**

For prompt attention tell our

Two essentials to poultry success are cleanliness and kindness. Cleaning the

is just where my kindness tells; no matter how "hatchy," they never squall and bite and become excited and tramp their

Mark off rows 4 feet apart, and every 3

center and laths at intervals to support the wire, to which attach a wire netting or other trellis for vines to run on. A

By this method we have picked cucumbers when neighbors' vines started in the usual way at the same time were only half grown, and our vines continued

many concrete examples of the increasing number of problems that the farmer is required to face, but that would be useless here.

| evaporation or run off.

The country is the best place to teach agriculture, anyway. Here no fancy apparatus is needed for illustrations. Right at hand there are different kinds of soil

schools—and that day will come none too soon.

Pennsylvania.

OUR EXPERIENCE POOL

All our readers are invited to contribute their experiences on the topics under discussion. \$2.00 will be paid for the best, and \$1.00 for the next best contribution, and so on for each other article published. Contributions must be in our hands 15 days before date of issue.

Topic No. 1198, July 1.—We want your experience with strawberries; have you found them a profitable crop and to what extent? Give your acreage, varieties grown and any special care which has proved effective. Manuscripts limited to 250 words—If you can tell your story in less, so much the better.

Topic No. 1199, July 15.—Sheep on Eastern Farms. The decline in the number of sheep raised on eastern farms during the past twenty years has been very marked, but we are told that sheep can be raised profitably in the East, both for wool and mutton. We want the experiences of eastern sheep-raising farmers as to whether or not they have found sheep profitable, with such details as to breeding, raising and marketing as can be put in a 250-word contribution.

Topic No. 1200, Aug. 1.—What forage crops have you raised for your swine, and on what summer pastures do you note the best and most economical gains? Give particulars as to your plan of summer feeding of swine and your practical observations as to most successful methods of handling at this season of the year. Limit your manuscript to 250 words.

Topic No. 1197.—Do You Keep Accurate Farm Accounts—Income, Expenditures, Inventory, etc.—and What Have You Accomplished Thereby?

M. T. M., Mitchell, Va.—We have been keeping a record of our herd of 35 cows ever since we have been in the dairy business, now about four years. As we always have a large number of calves for sale we can obtain a much better price for the ones with heavy milk records back of them. Recently we sold a pure-bred bull calf for a handsome sum simply because we advertised what his four nearest dams averaged in the past year. To keep a dairy record makes the herd appear more interesting to the owner, and it is only in this way we can weed out the boarders. The shorter time we spend on our accounts yields larger returns than an equal amount of time devoted to farm work, as we aim to make proper use of the information our records contain. Besides our dairy record we keep farm accounts, also, in our ledger book. These are kept in a very simple form. On one page we have "cash received" during the month, and on the opposite page we have the amount of cash paid out. Thus we know the amount of grain and stock sold, what our milk checks amounted to in the past year, just how much was paid out for labor, improvements, etc.

Our flock of poultry has become more interesting and profitable to us since we have been keeping an account of their work. From one pen of 20 Leghorn hens we have sold \$50 worth of eggs in the past five and one-half months. The other fowls have laid well, but they did not make the record the Leghorns have, yet if it was not for our poultry accounts it would be a matter of guesswork which breed was in the lead.

Mrs. E. A., Ashville, N. Y.—I always hated to keep accounts, therefore when my husband died and I began farming independently I abridged this part of the work as much as possible, though I knew I stood little chance of success if it were entirely eliminated. Mine is a small poultry and fruit plant, and I find it more convenient to take a spring than a year-end inventory, for the reason that much of the cash value is in young fruit trees, vines, etc., which may or may not survive the winter. I usually balance accounts for the year at that time, too, since the work Jan. 1st must necessarily be estimated. My poultry account shows all direct and indirect expenditures for the poultry, as well as the receipts and the feed bill, though many people charge the hens with feed only. This account is divided into months, and each month posted up separately. My fruit and garden account, however, is not so divided, since the months that have expenses have practically no receipts, and vice versa. I combine my garden with my fruit, because so much fruit grows in the garden, and so many vegetables in the orchard that the two can hardly be separated. Each field appears in an account by itself, so that I can tell at once whether or not a certain crop has been profitable. My own work is not charged, because my housework, my baby and many other things prevent my doing any great amount of farm work. If we get our living I don't expect much more while the baby is small. It will be seen that my system of accounts is very

crude, but it is fairly accurate and answers my purpose just as well as a more elaborate method would.

W. H. R., Palm, Pa.—I keep a complete set of farm accounts, which means an inventory at the beginning and end of the year, an account of all money received and paid out, and a record of all work done by men and horses. Separate cash and labor accounts are kept of the following: Farm, horses, poultry, cows, hogs, corn, oats, hay, wheat, rye, potatoes, truck, fruit, pasture, alfalfa, equipment, labor, personal, accounts payable, accounts receivable, and inventory. To make the accounts complete one must not forget to charge crops with the use of the land and buildings and interest on the money expended before they are marketed. To find the cost per hour of man labor the total number of hours worked is divided into the balance of the labor account. The cost per hour of horse and equipment labor is found in the same way.

One finds lots of surprises and sees many improvements to be made in the farm business when the accounts are closed. I found it cost me 16.1 cents per hour for horse labor, and that the horses worked only a little over three hours per day, on the average, last year. I am trying to reduce the cost by doing hauling for other people during the dull seasons. I also learned how to arrange my crops to give a better distribution of labor. Sometimes one finds that the poorest crop is the most profitable, and vice versa. Complete accounts are the only method by which a farmer can keep tab on his business, and if one wishes to be successful it is necessary to do things in a business-like manner and not let one enterprise eat up the profits of another.

C. E. D., Cumberland, Md.—I have three farm books that are kept up to date. First is the "g-book. In it is put every important item, such as stock bought, price, age, description and who from; planting corn, potatoes or grain took so many days, so much seed, and cost so much, all with dates; sold apple butter, took so many cut apples, so many pounds of sugar that cost so much, and made so much butter. The poultry book is divided into pages and columns for feed cost, eggs laid per month and daily yield (marked on wall calendar), eggs set, eggs hatched, chicks to hatch, number hatched, chicks sold, eaten and died, cause of death, price of chicks sold, number of eggs sold, price, with a yearly summary. The third is the debt book—what we owe and debts due us. It only takes a few minutes each day to make the entries, but the data is valuable, and available in after years. A substantially bound ledger can be bought in any book store cheaply, and it keeps the business up-to-date.

E. M., Armagh, Pa.—The keeping of accurate accounts is just as needful to the farmer as to any other business man. By means of these accounts the farmer can see exactly which crop or what live stock is paying the best. I keep accurate account of all the cows which I am in charge of now, and by this account can tell exactly what each cow does, and if she is a paying or losing proposition. The accounts of cattle are simple, for by keeping the cost of feeds, labor and equipment I can readily figure out the profit or loss on each animal. The system is as follows: 1. Each animal's feed is kept account of, which includes grain and roughage. 2. The milk of each cow is weighed. 3. The cost of labor is divided equally between all the animals. 4. The interest and depreciation are charged up equally among all the cattle at the end of the month. 5. All other cost items are divided up between the cattle. 6. The calves are credited to their mothers. 7. An equal share of the manure is credited to each cow. 8. At the end of the month and the end of the year the record is complete, for by this procedure the profit or loss on each cow is determined.

W. A. G., Sheridan, Ind.—All mercantile and manufacturing individuals and companies keep thorough sets of books.

They could not do business long without so doing. Likewise the best farmers and stockmen do the same. It is such a simple operation to keep a set of books, and such an education towards progress, that no farmer can afford to be careless in keeping a full account annually of all he does. To keep a set of books for the farm accounts a certain time of the year should be established as the annual time of beginning. I like this to be March 1st, as it is then there are the least quantities of grain, hay, etc., on hand; for I am going to advise that at the time of year the account books are opened a full inventory of all that is possessed should be taken as a basis of operations. This is required annually, and includes the value of the farm and its improvements, the cash on hand, the stock, and all the produce. Set down at the time the actual cash value of everything, as the following inventories may disclose the fact that there has been an increase or a decrease in values during a year. With an inventory recorded in a small indexed ledger, which is also to receive the receipts and disbursements for the year, there is but one more small book required, commonly called by merchants the "blotter." Within this small book there is to be written daily and in

a promiscuous way, all the transactions that take place. Record the day of the week and the date of the month regularly. At least once a week post all the items found in the blotter on classified pages of the ledger.

At the end of a year's transactions take a new inventory, but for the year whether or not there has been money made or lost. It is like this: At the end of the year foot up the two accounts of expenditures and receipts. If there has been more sold than bought, if the new inventory and the one previously made are the same, the difference between the debit and the credit columns will show the amount of profit made. On the contrary, if there has been more bought than sold and the inventory shows the same value as the previous one, the difference of the two accounts will show the loss.

The whole process of ascertaining the profit and loss, let the inventories vary as much as they may, is exceedingly simple and requires but little time to attend to it. Besides this way of managing farm transactions helps to make a truly business man of the farmer, and he is more likely to become more thrifty and intelligent.

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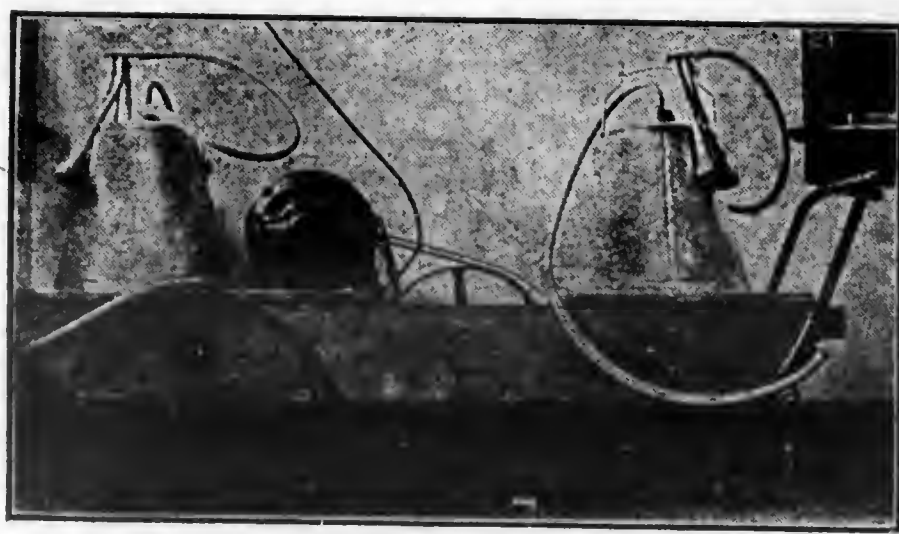


Shall We Milk by Hand or Machine?

(Concluded from page 243)

be cut in proportion, as in a herd in New Jersey where I found that there were two men with three units of a machine milking 50 cows, in place of the original force of five in the days of hand milking. But to the dairyman of moderate or small means, the elimination of one man, at a saving of \$480, is quite an item, adding one year to another.

There is another way the milking machine saves money, which might not present itself at first thought; and that is in saving udders. Many hired milkers are careless about stripping or clean milking of the cow, and a little milk left in the udder day after



The "Auto-Milker"

day often causes a lost quarter, or even the ruin of the whole udder, especially if dealing with a heavy milking animal during the first months of lactation. As the udder is the business end of the cow, a spoiled quarter or half or whole bag means the loss of a cow, and grade cows are worth \$75 or more at present. The mechanical milker is a clean milker—very clean. I have seen less than a pint of strippings taken from a dozen cows after the machine had done its work, and every user of a milker—no matter what the make—whom I have asked this question, has said that it always cleaned the udders out better than the hand milking.

Again, machine drawn milk is cleaner milk, because at no time is the flow in contact with the stable air, coming, as it does, through the teat cups which are held to the udder, to the tubing, and so on down into the covered pail. It is almost a universal custom for the milk dealers to give a bonus for careful handling of milk, scoring for equipment and method, so again we have money added by the use of the milker, a small sum per hundred pounds, a tenth of a cent, it is true; but it runs to dollars in the course of a year.

Now comes the important question of cost. There are several standard makes of machines, all good ones, with a difference between the cost of the most expensive and the lowest priced one of a few hundred dollars. All do good work. Three of them I have seen used on many farms, and the owners, whose opinions are what those interested will pay the most attention to, have all spoken of them in terms of the highest praise as pieces of efficient dairy mechanism.

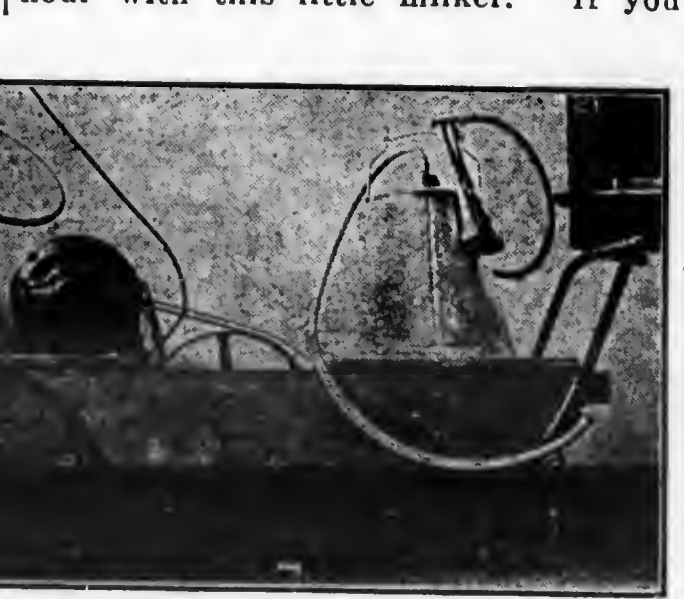
One of these makes, which has a pulsator with what is called a "rocking motion" and the vacuum in the pail, costs, for two units, \$220; upkeep about \$9 a year, or less, according to the care given it; a 2 H. P. engine, say, \$110. The cost of installation varies with the barn measurements, but is not a large item. In fact, this type of machine can be put in for about \$450 for two units, with all the necessary items.

Harking back to our dairyman with 15 to 20 cows, who saved \$480 by the dismissal of one man, he could pay for his milking machine with what he saved on the man the first year. Thereafter he could save the difference between the \$480 and the cost of gasoline and upkeep only.

In this discussion we have purposely omitted the gasoline cost, as it fluctuates so at present that figures given today would not be correct tomorrow or next week. However, when gasoline is at a

normal figure, the cost is low, as a single horse-power engine uses little gasoline, and for a small dairy I have seen 1/2 H. P. engines used, which take much less.

Another machine, which is the simplest in construction, and therefore the lowest in price for a reliable machine, has the vacuum not in the pail, but in the mechanism on the cover, and while moderate in cost is perfectly satisfactory in operation. A 2-unit outfit, including everything outside of the power, costs only \$175; upkeep is less than \$2 per year. Say you have 10 cows and it takes you an hour or probably an hour and a quarter to milk them. You can do it in less than three-quarters of an hour with this little milker. If you



The "Auto-Milker"

value your time at only 15 cents an hour you will save \$54.75 a year, counting an hour a day. Those hours would be additionally valuable to you if they allowed you to keep some pigs and chickens which you cannot now think of having because you do not have the time to attend to them; or if they allowed you to do some field work you could not reach because you had to spend so much time in the barn. Or, if you have a son ten or more years of age, he would probably be delighted to run the milking machine for you, especially if he has a liking for machinery—and he could do it, too. Or your daughter or your wife could run it, as there is nothing about the handling of a milker that would be unpleasant to the neatest woman. If you have had a man to help you in the milking stable you will not need him, and the amount of his wages will pay for this milker more than twice over, the first year.

Even the latest "kink" in milkers, the auto-milker, costs only \$210. This is fitted for either electricity or gasoline, and is on wheels, so that no barn fittings are needed. If you have electricity in your barn, attach it to any lamp socket near the cows and put it to work. If you have no electricity, there is the gas auto-milker with a little gasoline engine on it, which uses only a quart of gasoline to milk 72 cows. The auto-milkers can milk 15 to 18 cows an hour.

Are milking machines hard to take care of, to keep them in good running order? Decidedly not. No piece of machinery used on the whole farm will run properly and give good service unless it has a reasonable amount of care, but the mechanical milker needs no expert to keep it going. Keep it clean, see that the moving parts are oiled, handle it as you should any of your dairy equipment, and it will be a good servant. Your harrows, plows, cultivators, wagons, separators—all these require a certain amount of attention, and the milking machine is no exception. The one thing to be especially careful about is the cleansing of the rubber tubing, the teat cups and connections. If they are neglected for days at a time it will be difficult to clean them; but if they are cleaned after every milking, and kept in lime water between milkings, there will be no trouble about their condition. The

solution generally used is a lump of lime about the size of a standard baseball to 25 gallons of water. One farmer in New York State washes all the parts thoroughly in cold water, then with hot water and sal soda, and then immerses the tubing in a crock of clean salt water until the next milking. The pails and tops and teat cups he keeps in a box covered with clean cheesecloth when not in use; and he has no trouble with either milk or machine. Washing powders, I have been told, are not satisfactory.

Cows take kindly to the mechanical milker, possibly because the manipulation is perfectly uniform and gentle. As many very valuable show cows and test cows are milked by machine in various parts of the country, it is self-evident that the udders are not injured. Visiting the celebrated White Horse Jersey herd at Paoli, Pa., where they use machines on many of their famous cows, I examined the udders and teats of several which had been milked only a few hours previously and found them flexible, and the teats in a perfectly natural condition, smooth and elastic, and in no way differing from those of cows which had always been milked by hand.

The facts as given in this article are all subject to verification; and if you have 10, 15, 20 or more cows, you will find your hours of barn work shortened, your labor with your cows less tedious and disagreeable, your milk cleaner, your cows milked out better and more uniformly, (which often increases the flow), and your expenses lowered—with consequent profit—by the use of any standard milking machine.

Care of Cream

During the hot days of spring and summer the farmer who is selling cream to the creamery finds it a problem to keep his cream in the proper condition. However, there are but a few simple rules which should be followed, that would result in better cream. First of all these is cleanliness. Dirt, remember, carries bad flavors. If the barn or its surroundings and cows are dirty it will result in poor milk; poor milk results in poor cream; poor cream results in poor butter.

Immediately after separating, the cream should be cooled down to at least 50 degrees F. Warm cream should never be poured upon cold, as the temperature of the lot is raised and bad flavors may result. It is essential that the cream be stirred frequently to insure uniform ripening. If the cream is left undisturbed, the fat rises the same way as it does in milk. As a result the cream is

full of curd particles or it becomes "lumpy." Never put cream in a rusty or battered can and always remember that milk and cream have that property of absorbing bad flavors.—W. B. Combs, Missouri College of Agriculture.

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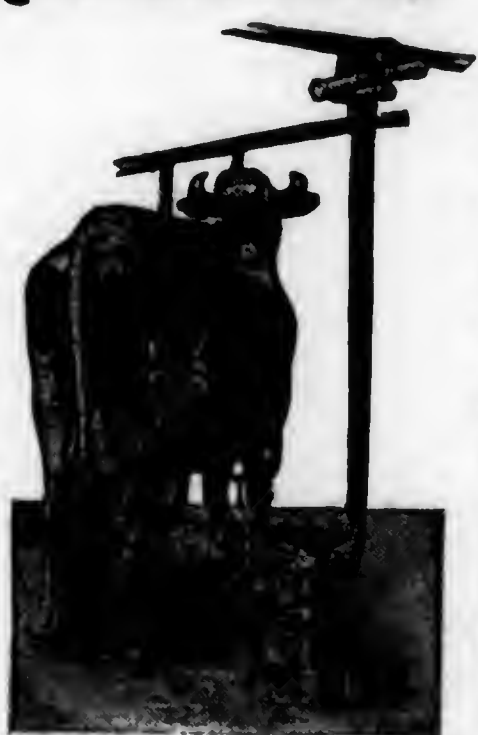
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The Practical Farmer

Live Stock and Dairy Section

EDITED BY W. H. TOMHAVE

"The Best Breeds"

The question is often asked, "Which is the best breed of dairy cattle, beef cattle, horses, sheep or swine?" The unprejudiced person can answer that question in only one way; namely, there is no best breed. All breeds have their merits and demerits, and in no case has one breed, as a class, been found superior in all respects over its competitor in the same class. Dairy cattle have been pitted against each other in competition for economical butter fat production, and various breeds have won out at different times. In each case these animals were only a few exceptions out of many thousands. This leads up to the question, "Is any man justified in pronouncing one breed better than another, unless it is for personal preference? Does not the true value of the animal lie in the individual and not in the breed?" Personal choice, to a large extent, influences the success or failure with any breed of live stock. One man may be successful with one breed, while another person will have equal success with some other.

Nearly all breeds of live stock have been popularized to a considerable extent, at some time or another. In nearly all cases it has been like a real estate boom and resulted in a downfall and a reversed period of prosperity for the breed. Fifteen and twenty years ago the Shorthorn cattle were in such a demand that it was almost impossible for breeders to supply the demand. This strong demand was too much of a temptation for the unreliable breeder and dealer. He was not far-sighted enough to consider the future welfare and interest of the breed. Many cattle, entirely unfit for breeding purposes, little better than grades and scrubs, were sold to the

small farmers. The result of such operations was not felt until the offspring of these worthless individuals began to mature. They were disappointing and a "black eye" to the pure-bred business. It took the breeders of the Shorthorn cattle a long time to repair the damage done by careless individuals in the distribution of breeding stock. This experience should stand out as an object lesson to all breeders of pure-bred live stock. Careful and conservative work on the part of the reliable Shorthorn breeders has again put the breed on a sound basis and has given the public confidence in it.

During the past few years other breeds of live stock have been going through periods of prosperity, such as that experienced by the Shorthorns nearly a decade ago. Speculators and unreliable breeders have taken advantage of this boom and have thrown upon the market for breeding purposes everything with pedigrees, regardless of individual merit. In many cases exorbitant prices have been received for cattle without merit or known performance, but sold upon the record of some exceptional individual of the breed. The results of such manipulations are bound to be a setback for any breed, and those who have the interest of any breed at heart should try to guard against such practice.

Farmers and breeders who are considering the purchase of live stock of any kind, should go slow and find out something about the records of the ancestors of the animals in question before they make their purchase or selection. Money invested in pure-bred live stock should be placed where it will bring proper returns, as well as assuring success from a breeder's point of view.

Dock the Lambs

Much has been said and written about the advantages and value of docking lambs while young. We still find, however, many flocks in this state that have among their number, sheep that carry long tails, the wool of which is usually filled with manure and filth. Such sheep detract much from the appearance of the flock as a whole, and to the prospective buyer, indicate carelessness and poor management. Moreover, undocked sheep are less thrifty and not as profitable to the grower as those that have been docked. Lambs that have not been docked will gather on their tails, especially during the fall and winter, all manner of refuse and filth; the tails, dragging in the snow, become water and ice laden; they are never dry, and at all seasons the accumulation of manure adds several pounds of useless weight to the sheep. In the feed lots such lambs are always in the poorest condition and do not make as good use of the feed consumed as the docked lambs. If the sheep are kept for breeding purposes they are less desirable, because of the difficulty in getting the ewes bred. During the spring and summer months the tails are an inviting breeding place for animal parasites, thus causing considerable loss from that source.

Docking lambs is a simple operation and should be performed before they are too large. It is a good plan to dock them when the lambs are from two weeks to a month old. A sharp chisel and a wooden block are the simplest implements to use. A hot iron may also be used. One person can perform the operation, but it can be done more quickly by two—one to hold the lamb and the other to cut off the tail, which should be severed about an inch from the body. At this age the lamb will not notice the operation to any extent. In case of cold, wet weather it is well to keep the lambs shut up in dry pens, so as to keep them from catching cold. During warm weather, when there is danger from flies, it is a good plan to disinfect the stump of the tail, using a weak solution of carbolic acid or a coal tar dip. Old sheep may be docked in the same way, but there is more danger from excessive bleeding than in the case of the lambs.

What Rats Cost

It is estimated that rats cost the American farmers \$60,000,000 a year. Too much money to spend for the entertainment of a dirty, disease spreading little creature without a single redeeming quality. Abolish the rat and save money!

The Value of Scales and Babcock Test in the Dairy

By H. H. DEAN

There was a time in the early history of dairying when the owner of a cow could afford to "guess" at the quantity and quality of milk which she gave. But that day has gone by. The increasing cost of feed and labor makes it imperative that a cow owner shall know what each individual cow in the herd is producing. The best plan to find this out accurately is to use a milk scale and record sheet and test the milk at least occasionally for milk fat, with the Babcock test.

Some systematic plan should be adopted of weighing the milk from each cow, preferably at each milking, and these weights should be recorded on a suitable milk sheet. The most convenient form of milk scale is one having two hands which work on a dial, graduated into pounds and tenths of a pound, and reading up to 30 or 60 pounds—the latter for very heavy milkers. The advantage of this form of scale for weighing milk is that one hand shows the gross weight, while the other indicates the net weight of the milk in the pail. By having all the pails the same weight, the one hand may be moved back on the dial two, two and a half or three pounds, or whatever the pail weighs, then when the pail of milk is placed on the hook of the scale the hand and dial show the weight of milk in the pail without subtracting. By having the scale and milk sheet convenient the work is quickly done and milkers scarcely miss the time required to weigh and record each cow's milk yield. Unless things are convenient, milkers are apt to grumble at the time taken to weigh and record milk, hence it pays to have everything as handy as possible.

The most convenient form of milk sheet for the ordinary farm is one large enough to record the weights of milk from each cow in the herd daily for one month. There should be 32 horizontal lines (one for each day in the month and one for totals) and as many perpendicular columns as there are cows in the herd. It is also convenient to divide each horizontal space into two parts—one for morning and one for the weight of evening milkings. At the end of the month the sum of the weights in each of the perpendicular columns is the weight of milk given by each cow for the month. The sums of the horizontal figures are the weights of milk given by the herd daily. In this way a double check is made on the weights, and if a person is selling milk by weight the milk sheet is a check on the buyer; and also upon the milkers, as well as on the cows.

The monthly totals for each cow should be transferred to a herd record book where the yearly record is kept and such other data as when the cow was bred, when freshened, cost of feed, percentage of fat in the milk, profit, etc. (Herd record books and also milk sheets may be purchased at a reasonable cost. Or a person may rule ordinary

sheets and plain books for the purpose.) Some dairymen follow the plan of weighing three days in each month—either consecutive days or on the 1st, 10th and 20th of each month, then they average the weights of milk for these three days and multiply by the number of days in the month in order to obtain the monthly yield of milk. Those who follow this plan claim it saves labor and is near enough for all practical purposes. However, for all the difference in time and labor we recommend daily weighings. A strong point in favor of the daily plan is that in case anything goes wrong with the cow it is revealed at once in the lessened weight of milk and the careful dairyman seeks the cause and applies the remedy. In this way the life of a valuable cow may be saved.

TESTING FOR MILK FAT.

While it is better to take daily samples and test once a month by the composite plan (by which we mean taking samples daily and preserving the samples for a month, then testing once only during the month), for all practical purposes on a dairy farm, if samples are taken from each cow for two or three consecutive days during the first, third, fifth and eighth months of the lactation period, or even during the third and fifth months, the percentages of fat so obtained would represent fairly well the average test of the cow, for the year or lactation period. While the percentage of fat in a cow's milk varies from day to day and from month to month, and is usually high just after freshening and again before "drying up," she will produce about her average milk, so far as fat content goes, from the third to the fifth month after freshening. Therefore, to the man who has not time to test his cows frequently, or once a month, we should advise one, or better still, two tests of two or three consecutive days' samples, during one or both of the third and fifth lactation months.

For the man who owns and knows how to operate a Babcock test, he may test whenever convenient, such as a rainy day, holiday, etc., providing the samples have been taken.

In each stable there should be small glass bottles (2 to 4 oz. size) with metal screw tops, for holding samples. These bottles should have a label with a name or number for each cow. A small dipper for taking samples from the milk pail is convenient. In cold weather no preservative will be needed to keep the sample sweet for two or three days. In warm weather a very little preservative should be placed in each bottle before sampling. This will keep the milk sweet and in convenient form for testing. The preservative may be secured from any dairy supply house or from a drug store. Potassium bichromate is a common substance used for this purpose; also corrosive sublimate. They may be purchased in tablet form, but if using a small sample, a tablet should be divided

among three or four composite samples. Too much preservative, especially of bichromate of potash, or formalin, interferes somewhat with the test. As practically all these preservatives are poisonous, the milk samples should be kept away from children and should not be fed to live stock or chickens.

APPLICATION OF THE SCALES AND TEST.

Unfortunately much scientific work has little or no meaning to the ordinary farmer, for the reason he cannot interpret scientific language into terms of every-day use. As an example: Suppose that during a month a cow gives 1000 pounds of milk testing 3.5 per cent. fat. The owner, we will assume, is making this cow's milk into butter or sells it in the form of cream. He desires to know what this means in terms of butter or cream. The solution is, 1000 pounds of milk testing 3.5 per cent. fat means that 100 pounds of such milk contains $\frac{3}{4}$ pounds milk fat, therefore ten hundred (1000) pounds would contain 3.5X10 equals 35 pounds milk fat. In the processes of creaming (skimming) and churning, some of the fat is lost in handling, some in the skim milk and some in the butter milk. But to counterbalance these losses the butter maker mixes some water, some salt and some curd with the fat, to make what is commonly called butter. It is found by experience that, on an average, a good butter maker can make about one-sixth, or about 16 per cent. more butter than there is fat in the milk. Therefore, if we add one-sixth to the fat, which in this case is one-sixth of 35 or 5.8 pounds, we have 35 plus 5.8 equal 40.8, or nearly 41 pounds of butter in 1000 pounds of milk. If the butter sells for 30 cents per pound it has a money value of \$12.30. There is also the value of the skim milk and butter milk. Theoretically there would be 1000 minus 35 or 965 pounds by-products. At 30 cents per 100 pounds these are worth \$2.89, making a total of \$15.19 as the value of the cow's milk for the month. If feed and labor for the cow cost 30 cents a day we have a profit of about \$6 on the cow for the month, plus the value of the manure.

If cream be sold it will likely be purchased at so much per pound of fat or by the gallon of a standard test. If sweet cream is furnished it should bring about 40 cents per pound of fat. Not counting the fat lost in handling or in skim milk, the fat sold as cream would bring about (35 pounds at 40 cents) \$14. In this case the butter milk is lost, but the labor of churning is saved.

Whether selling cream by the gallon or by the pound fat, a Babcock test should be used to check the cream to see that it comes up to standard and also does not exceed it. It is valuable to check the buyer, who may give tests which are too low.

Give Water Supply Careful Attention

Is your well in such a condition that there is no danger of polluting the farm water supply? Grade up to the well from all sides and make the platform water-tight with a little slope so the overflow from the pump will run off easily. If the well is poorly located the upper 6 feet of curbing must be water-tight. Dug wells may be protected by making the upper 6 feet of the curb with concrete 6 inches thick and extending at least 8 inches above the ground level. See that privy vaults, garbage or manure piles are located so that the drainage from them will not be carried into the well.

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Studying Dairy Manufacture

A Short Course Which Leads to a Paying Position

(During the summer months, the boy on the farm, just ripening into manhood, expends a lot of thought on what he will do during the coming autumn and winter to fit himself for a better position in life; nor is he alone in this matter of anxious thought, for the parents are equally disturbed as to what is best for the boy, and how he can be made to see that the country presents a better opportunity for him, as a rule, than the city. Believing that in education in agriculture and kindred lines lies the solution of the difficulty in most cases, we asked the faculty of Pennsylvania State College to tell us something regarding their short courses, as a solution to the problem when limited means and time make a full agricultural course prohibitive. This article is the result.—Editor.)

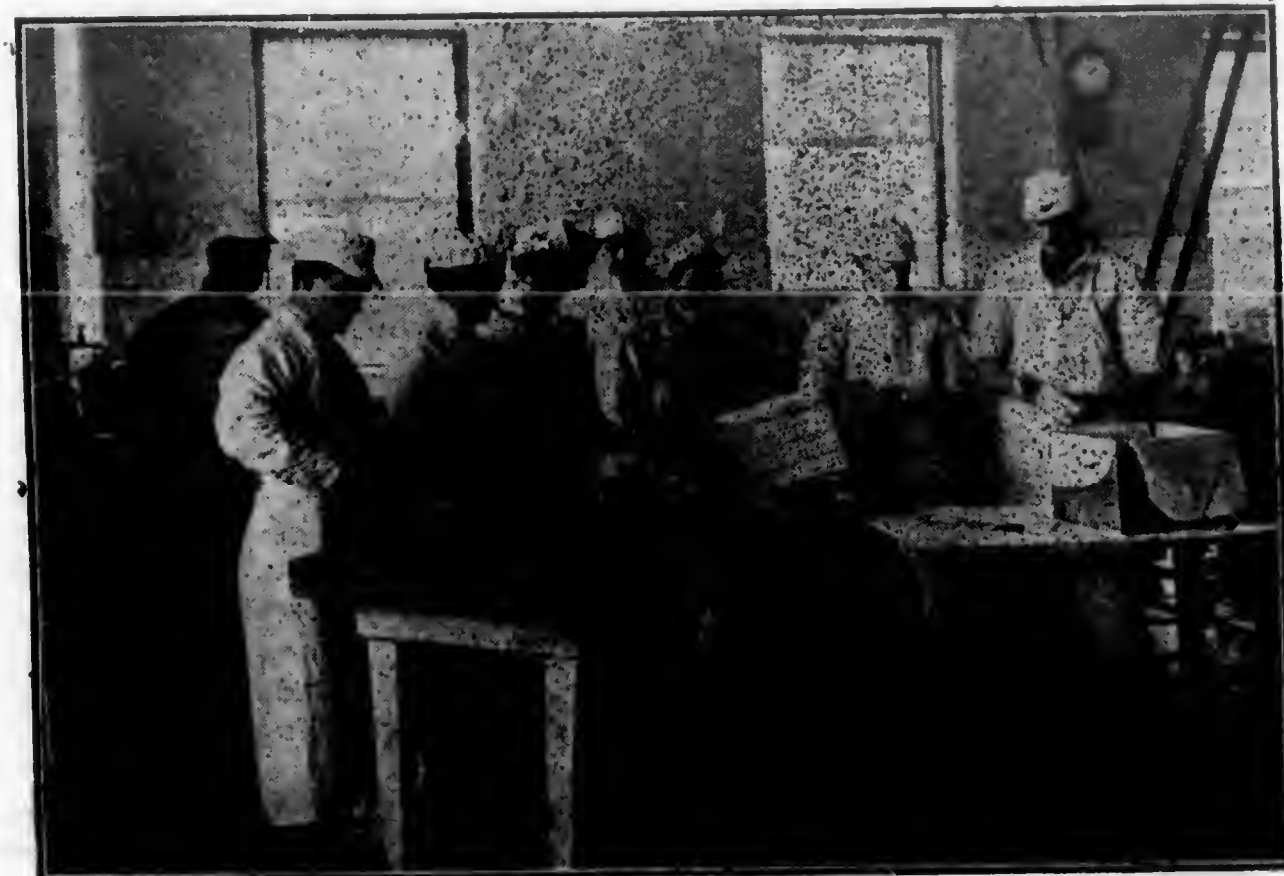
The dairy manufacture course as comprehended in the winter short courses in Agriculture and Home Economics at the Pennsylvania State College, in which 25 students, 23 men and 2 women representing four states; were enrolled this year, is intended to fit the student as a creamery butter maker, or to equip him for practical work in the cheese factory. Unlike some of the other options in the winter courses, that in dairy manu-

facture is prescribed and requires all the time of the student, rendering the election of additional subjects impossible. There is a good demand for men trained in this line of work and already a number of students taking the course have either secured positions or have good prospects. For trained and experienced men salaries ranging from \$70 to \$100 a month are not uncommon. Some of these positions involve managerial work in cheese factories, creameries and ice cream plants. Inexperienced men, of course, find it necessary to accept places as helpers in order to get sufficient experience to enable them to assume more responsible positions later.

The instruction in butter making involves a general dairy course, including the care and handling of milk and the principles and practice of butter making. The methods of preparing starters, the ripening of cream and the making and packing of butter are a part of the classroom work. The large commercial creamery owned by State College, which in equipment is probably second to no other college creamery in the country, is the student's laboratory. Here he passes through all the stages of actual creamery work, from the receiving of the milk and cream to the packing and shipping of the finished product. A study of the standard market requirements of butter and the grading and scoring of butter, cheese and milk receive special attention. In the study of cheese making both the granular and cheddar processes are included. Principles are outlined through classroom lectures and text work, and each day a class in cheese making is

conducted by students under the direction of an instructor. Three different types of ice cream freezers and four types of churns are used at the State College creamery. Lectures and practice in making ice cream with hand power machines, including the mixing of flavors, the packing and figuring of costs, constitutes the work in ice cream manufacture. This industry has become a separate branch of dairy manufacturing in many sections, a fact which lends additional interest for one contemplating work of this nature.

The increase in the amount of mechanical work in dairy manufacturing plants presupposes a knowledge of creamery mechanics on the part of prospective employees, especially those who are to assume managerial supervision. In recognition of this fact, provision is



Students Preparing Butter for Market

made in the winter short courses for instruction in creamery mechanics, which embraces a discussion of the principles, care and handling of boiler and engine, economy in firing, grades of fuel, operation of injectors and pumps and setting engine valves; also practice in alignment of pulleys, belt lacing, pipe fitting, repairing and adjustment of separators and other creamery machinery.

The diversity and comprehensive scope of the course is indicated in the variety of subjects treated. Bacteriology, a subject inseparably linked with dairy practice, especially dairy manufacture, is injected into the course in a study of the methods of counting bacteria, of the contamination of milk, the effects of improperly cleaned utensils and methods of controlling bacterial growth.

The phenomenal interest which has been aroused within the last decade in cow testing work and its value as a means of detecting "boarder" cows or those which are living on the others in the herd has created a need for men skilled in test work, who can take charge of such operations for large or small cow testing associations. Here again the winter course is "Johnny on the spot," furnishing as it does, thorough drill in the use of the Babcock milk tester and the lactometer, in the determination of fat in milk, skim milk, butter milk and cream; in the determination of preservatives or coloring matter. If one can imagine what it means to a student with training in testing work to go back to the farm and with the knowledge thus gained weed

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out the undesirable cows in the home herd, he will understand the value of this single item in the course.

Verily, farming covers a multitude of activities, and the requirements of the good farmer are legion. He must be first and above all an agriculturist; he must be a mechanic, a business man and an economist. As a business man the dairy farmer finds it necessary to keep close account of receipts and expenditures, and he must therefore have a simple set of books.

Short course students in dairy manufacture are taught simple double entry bookkeeping with special application to the needs of creameries and cheese factories. All students must keep a day book and ledger and a complete trial balance.

Upon satisfactorily completing the prescribed work of the dairy manufacturing course, the student is granted a record card, indicating the work done and the degree of efficiency acquired.

Students entitled to record cards may become candidates for certificates of proficiency. Such a candidate must spend at least one full season after leaving college in a factory or other approved dairy establishment. He must make such report and furnish such other evidence of proficiency as may be required, and must have his work in readiness for inspection at any time.

The college does not agree to find positions for students, but thus far the demand for men at good salaries, who understand the principles which may be learned in the Dairy School, and who can put them into successful practice in the creamery or elsewhere, has exceeded the supply of competent students.

The dairy manufacture course is complete in itself. Besides this course the winter short courses in agriculture and home economics call for instruction along almost every form of activity in these two branches.

More Dairy Cows Needed

An increase in the number of dairy cows in Pennsylvania from one million to three million is urged by Dairy and Food Commissioner James Foust of the Department of Agriculture.

Mr. Foust declares that slowly a crisis is coming and that something must be done to preserve the future of the products which solely depend upon the dairy cow. He says:

"Pennsylvania is considered by many people, without its borders, as a manufacturing state, but in addition it is a great agricultural state with its 218,000 farms with an average of 100 acres to a farm and its one million dairy cows.

"Pennsylvania would be a greater agricultural state if a movement was inaugurated to increase the dairy cows from one million to three million. No greater problem confronts Pennsylvania, as well as other states, as the future of the dairy cow. Stop to think that in this country there are the same number of dairy cows that there were fifteen years ago, while the consumption of ice cream alone has increased from 55 million gallons to 150 million gallons a year. The cheese consumption has doubled and the population has increased one-sixth, but only the same amount of dairy cows are on the job.

"These facts should bring the realization that something must be done to preserve the future of the dairy cow and the products which depend upon it. Not enough attention is paid to the dairy cow, neither is proper encouragement given to the dairy farmer, for all he gets out of his herd is the manure for the soil.

"Cows that cost forty dollars fifteen years ago cost ninety dollars today.

Bran that is fed extensively for producing milk cost twelve dollars a ton fifteen years ago and today it is twenty-eight dollars a ton. Labor that could be secured on the farm for fifteen dollars a month fifteen years ago is today costing thirty-five dollars a month and it is hard to get at that figure.

"With milk bringing practically the same price that it did fifteen years ago and butter costing on an average thirty cents a pound to produce on the farm under present conditions, it is readily seen that the farmer who owns a herd of dairy cows, gets .p at 4 o'clock in the morning to milk and has to haul it to his market or churn it into butter, gets nothing out of his investment except what goes for the soil.

"What the farmers must do is to assume modern farming methods, which the Department of Agriculture is trying to advance throughout the state, raise twice as much grain and feed to an acre as he does now, and then raise more dairy cows to keep his farm productive.

"The reason why we do not have more dairy farmers is because the farmer can devote his time and attention to almost anything else, for the time being, and make more money. But if he does not keep a herd of cows, the time will come when the farm will not be as productive as it would have been had he made possibly a little less money and worked a little harder in keeping a large herd.

"I subscribe to the sentiments of a prominent dairy official who says: 'Truly the cow is man's greatest benefactor. Hail, wind, droughts and floods may come, destroy our crops and banish our hopes, but, from what is left the cow manufactures into the most nourishing and life-sustaining food—and is she not life itself to the thousands of little ones stranded upon the hollow hearts and barren bosoms of modern motherhood? We love her for her docility, her beauty and her usefulness. Her loyalty has never weakened—and should misfortune overtake us, as we become bowed down with the weight of years, we know that in the cow we have a friend that was never known to falter. She pays the debt, she saves the home. God bless the cow—little do we realize the debt we owe her.'"

Air and Sunlight Chase Troubles from Hog Houses

To prevent the collection of moisture on walls, ceilings and floors of large hog houses, ventilation systems similar to those used in dairy barns and other farm buildings may be used.

A high ceiling, plenty of windows and three or four large ventilators in the roof will insure a supply of fresh air and reduce the moisture content of the house to a minimum. Air intakes should be so constructed that cold air will not strike the animals directly but will be carried upward to the top of the building, and then down. Drafts and extremely low temperatures are to be avoided.

In the small colony or movable house, the type used at the Pennsylvania State College School of Agriculture and Experiment Station, where several animals are kept, very damp conditions are likely to occur. To avoid this condition windows or the hinged portion of the roof should be kept slightly open.

Pens should be free from dust. Spray down the interior of the house occasionally with crude oil or one of the commercial dip preparations. A small amount of crude oil sprayed on the pigs will do no harm.

Windows covered with blankets or boards exclude sunlight, one of the best eradicators of damp and chill. Provide plenty of ventilation, keep pens clean and allow the entrance of sunshine.

Live Stock in Splendid Condition

Reports from all sections of Pennsylvania concerning the condition of live stock indicates that the past winter was one of the best for stock in many years. The reports just completed by the Bureau of Statistics of the Pennsylvania Department of Agriculture show that the losses during the winter and spring have been exceptionally low and that there have been no serious losses in any one district.

The losses as shown by the reports of the 700 correspondents are as follows: Horses, 2%; cattle, 2%; sheep, 2%; hogs, 2.5%. In 1915 the losses were: Horses, 2%; cattle, 3%; sheep, 2%; hogs, 3%.

The live stock went into winter quarters in splendid condition, the late pasture and the mild fall allowing late grazing. The winter was very favorable to the live stock and the increased care being given stock has had its good effects.

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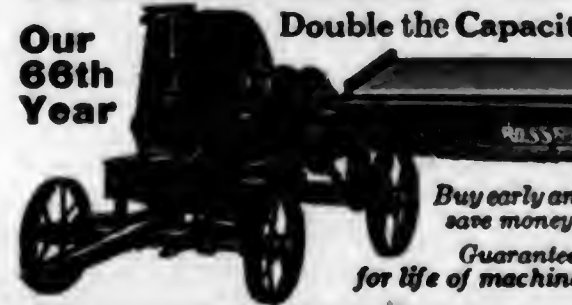


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Hurry and You Will Have it by the Fourth of July!

Pasteurize Skim Milk

CREAMERY AND CHEESE FACTORY BY-PRODUCTS MAY SPREAD CONTAGIOUS ANIMAL DISEASES.

(EDITORIAL NOTE.—The following article from "The Weekly News Letter," issued by the United States Department of Agriculture, seems to us of sufficient importance to warrant its publication in full. We suggest that our readers who are selling their whole milk to creameries and cheese factories and bringing back skim milk to feed their stock, read this article carefully and thoughtfully. It is the part of wisdom to do everything possible to prevent the spread of live stock disease.)

In the operation of creameries and cheese factories it is customary to return to the patrons the by-products (skim milk, butter milk and whey) to be used for feeding calves and pigs. The material that each man receives is necessarily from the mixed milk of many herds, some of which may be diseased. For this reason, unless precautions are taken, the creamery and the cheese factory, through their by-products, may become disseminators of such animal diseases as tuberculosis, foot-and-mouth disease, and contagious abortion, should these diseases exist in the community.

Pasteurization of by-products has been advised as a preventive measure and has been practiced to a limited extent; at least two states have enacted laws requiring the pasteurization of all skim milk and whey returned to patrons for feeding purposes. In Denmark a law of this kind has been enforced for several years.

The advisability of pasteurization was illustrated during the recent outbreak of foot-and-mouth disease in the United States. At a certain creamery in New York State raw skim milk was being returned to seven patrons. Later, five of these patrons were found to have foot-and-mouth disease in their herds. Of the other two, one boiled the milk before he fed it and the other threw it away for fear of possible infection. It appears very probable that the disease was spread by feeding raw skim milk from a diseased herd.

At another creamery in the same state skim milk was being returned to 30 patrons, but in this case the milk was pasteurized properly before being returned. Foot-and-mouth disease was discovered in the herd of one of these patrons, and in the judgment of the inspectors the disease had then been present for at least five days. During this time the milk had been taken to the creamery and pasteurized skim milk returned to the 30 patrons. The disease, however, did not appear on any of the other farms. Had the skim milk not been pasteurized at this creamery, it is possible that the disease would have been carried, by way of the creamery, from the one infected farm to all the rest of the 30 farms.

Skim milk, butter milk and whey may be pasteurized at a fuel cost of about 2½ cents for every 1,000 pounds—a cost that is negligible when compared to the financial loss that may result from feeding the products raw.

Skim milk, butter milk and whey may be heated by the use of steam jets while being elevated into a tank. This practice, however, causes the milk solids to "cook" on to the interior of the pipe and cleaning is difficult. If cleaning is properly done each day, however, this method is not objectionable.

The simplest method of pasteurization may be to turn steam directly into the liquid in the tank until the desired temperature is reached. In this case a temperature of not less than 145 degrees F. should be maintained for a half hour. When, however, it is desirable to draw milk or whey from the tank as it is running in, it becomes necessary to com-

plete the pasteurization before the product reaches the tank. This can readily be done by running a steam pipe into the skim milk, butter milk or whey pipe near the tank. A device of this kind is on the market and is known as a skim-milk pasteurizer. When this method is used the skim milk or whey should be heated to a temperature of 180 degrees F.

As creamery and cheese factory by-products may, under certain conditions, be agencies in spreading live stock diseases, and as pasteurization of these products is a preventive measure that is easily and cheaply effected, the adoption of this practice by all creameries and cheese factories is earnestly recommended by the department.

Keep the Best Brood Sows

EARLE W. GAGE.

Too many farmers make the mistake of discarding their best sows. While it is necessary from time to time to replenish the breeding herd, many farmers dispose of their sows before they have passed their period of usefulness. Some of the experiment stations have gathered statistics on the relation of age of brood sows to that of the size of litters produced. The results of a series of experiments conducted in Wisconsin should point the way to greater profit to many farmers who have held that after bringing a few litters of pigs, the sow's usefulness is impaired.

The Wisconsin survey took into consideration the difference between mature sows and gilts as prolific producers. The tests proved that the number and also the weight of the pigs increased as the sows increased in age, and, with stronger and more vigorous pigs at birth, more rapid and economical gains are made.

A compilation of the records of more than 6,000 farm sows shows that yearling sows averaged 6.65 pigs per litter, and 5-year sows averaged 8.4 pigs. At the state experiment station 1-year-old sows averaged 7.8 pigs per litter, with an average weight per litter of 14.2 lbs., while 4 and 5-year-old sows averaged 9 pigs per litter, with an average weight per litter of 26 lbs., or a considerable increase in their favor. Aside from the already established fact that it is best to breed from mature animals, these facts show the farmer that it is very poor business to sell the old mature sows if they are regular breeders, and substitute immature ones of unknown breeding qualities. The mature sow can well raise two litters a year, while it is not advisable to attempt to produce two litters a year from sows under two years of age.

The brood sow should be selected to reproduce thrifty pigs in large numbers and rear them successfully. The best method by which to select prolific sows is to keep a herd record and to cull out all sows that are not good producers and sucklers. Prolificacy is usually a family characteristic and it is always wise to select the prospective brood sows from a large litter of robust, vigorous pigs.

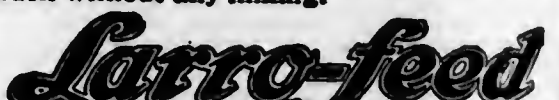
A "feminine" type of sow is less likely to prove a disappointment as a breeder than is the one of a coarser and more masculine development. The "motherly" appearing sow is seldom a failure as a breeder. Disposition has a powerful influence, being a desirable characteristic in a brood sow, while a good disposition will nearly always be indicated by width between the eyes. Avoid selecting as a breeder a sow that droops immediately back of the shoulders, or one that is narrow across the loin. These are important points to keep in mind when selecting breeding stock.

While sows of good length are desira-



THAT'S GUARANTEED

To produce more milk than any other ration either home mixed or purchased and do it without giving your cows constipation or other trouble. Ready to use right out of the sack without any mixing.

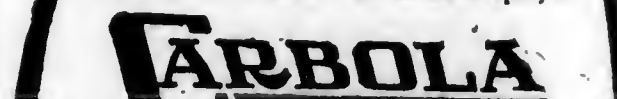


Absolutely free from adulterants and fillers. Just like the feed you would mix for yourself. It is a special combination of choice cottonseed meal, dried beet pulp, flaxseed, corn distillers' grains, wheat bran, wheat middlings and a little salt, that's all; each ingredient weighed by automatic scales and thoroughly mixed in huge power-driven mixers, so that it is always absolutely uniform, and always good. An extra quart or two of milk daily from each cow may turn a loss into a profit. Try LARRO-FEED for more profits. Sold on "money back" or "satisfy" plan, the decision being entirely up to you. LARRO dealers almost everywhere; write if you want your own.

THE LARROE MILLING CO. 555 Gillespie Bldg., Detroit, Mich.

A Rainy Day Job

Paint the interiors of your dairy, barns, chicken houses, out-buildings, cellars, etc., with this snow-white disinfecting paint that will never crack, peel or fall off. Destroy disease germs. Keep the buildings bright and sanitary. Put on with brush or spray.



Is a mineral white paint, combined with the world's most powerful germicide. Stronger than carbolic acid yet harmless to man or beast. Kills lice, mites, ticks, etc. It is always absolutely uniform, and always good. An extra quart or two of milk daily from each cow may turn a loss into a profit. Try CARBOLA for more profits. Sold on "money back" or "satisfy" plan, the decision being entirely up to you. CARBOLA dealers almost everywhere; write if you want your own.

Use It Instead of White Wash

To paint health and sunshine into every dark place. If your dairy will not supply you, send us a name and your address. Will deliver to you as good as Carbolite.

10 lbs. (10 gal.) for \$1 plus postage
25 lbs. (25 gal.) for \$2 plus postage
50 lbs. (50 gal.) for \$4 plus postage
100 lbs. (100 gal.) for \$7 plus postage

Send 25 cents for a trial package—enough to paint and disinfect 250 square feet.

Carbola Chemical Company
7 E. 42nd St. Dept. K New York City



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ble, it is a mistake to overlook the early maturing qualities, which are very essential to profitable swine raising. If the sow has ample width great length will usually not be at the expense of the early maturing qualities; but a narrow-backed sow is usually slow in maturing and is more likely to be a poor sucker and a poor feeder.

The breeder of pure-bred hogs fully appreciates, and the successful swine grower refuses to part with his mature sows. He knows that continual breeding from immature sows will finally mean that his profits will be lessened, while his reputation as the producer of prime pork will be ruined in time. The same common sense must prevail in selecting and breeding the sows as with other farm animals if profits and future development are to be anticipated.

New York.

Lameness in Horses

J. H. REED, V. S.

(Continued from June 1st Issue.)

SPLINT LAMENESS.

Splint lameness is quite common, and to the non-initiated, sometimes quite alarming, in young horses, and occasionally in horses of any age. It is rarely noticed in the hind limbs. In order to understand, and appreciate, the trouble, it is necessary to have an intelligent idea of the bone anatomy of the horse from the knee to the fetlock. This part of the limb is usually called the cannon. It consists of three bones, one large cannon bone extending the whole distance from the knee in the fore limb, and from the hock in the hind limb, to their respective fetlock joints. This bone has a somewhat flat and broad posterior surface, to each edge of which is attached a small, somewhat triangular shaped bone of considerable size above, where it articulates with the bones of the knee joint, and gradually decreases in size toward the fetlock, becoming quite small, and terminating in a small, somewhat pea-shaped nodule, a little more than two-thirds down the large bone. These nodules can readily be felt, one on each side of the limb, a few inches above the fetlock. In fine limbed horses they can sometimes be seen, and are occasionally mistaken for splints, especially in cases where one or more are larger than usual. The attachment of the small bones, commonly called splint bones, to the large cannon bone, is ligamentous. A splint consists of a bony union between the large and small bones. Inflammation is set up between the bones, usually by concussion during ordinary traveling, especially on hard roads. As a result of this inflammation an exudate is thrown out, and the ligamentous attachment is destroyed. This exudate is, of course, soft at first, but soon becomes converted into bone, and unites the large and small bones by bony union. An enlargement of greater or less size can usually be seen, which, in most cases, gradually disappears by absorption, until nothing can be noticed, and in many cases cannot be detected by manipulation. At the same time the ossified (bony) union between the bones is permanent. Hence, a horse that once has a splint will always have it, although all visible symptoms have disappeared. We often hear people say that a horse over seven years old never has a splint. This arises from the fact that the visible enlargement has usually disappeared by the time the animal reaches that age, but, as stated, the union between the bones still exists. This absorption does not always take place, and it is not uncommon to observe well marked splints in horses of any age. In some cases the splint is double; that is,

an enlargement is noticed on each side of the limb. In such cases there is usually a bony deposit extending across the posterior surface of the large bone, from one splint to the other. This often causes irritation to the suspensory ligament, which passes down this surface and causes permanent lameness. Except in cases of this kind, and in those in which the splints are so high that the knee joint is involved, splints seldom cause permanent lameness.

SYMPTOMS.—In many cases there is no lameness, the first intimation of the presence of splint being the appearance of the enlargement, which usually gradually disappears. At the same time splint lameness is often seen. The symptoms are usually strongly characteristic. A horse lame from splint will usually stand and walk sound, but if asked to go faster than a walk will show well marked lameness, the head dropping decidedly when the sound foot touches the ground. The lameness is often noticed before there is any visible enlargement. When a horse, especially a young one, shows this proclivity of lameness, splint may be suspected. In splint lameness the lameness is more marked when the horse is trotting down hill, and the intensity of the lameness usually increases as exercise is continued. Manipulation will usually reveal the seat of the trouble. By pressing between the thumb and finger, the line of attachment between the large and small bones, from the knee downward, the seat can be detected by the horse flinching when the seat of the trouble is pressed, and if severe pressure be given he will often rear on his hind legs. The usual seat of splint is on the inner surface of the fore cannons, but it may be on the outer surface, or both, and is usually from one to three inches below the knee, but may be higher or somewhat lower. The hind limb is not often affected, but when it is the seat is usually on the outer surface. When we know the peculiarity of splint lameness, and the manner of locating it, we seldom have much trouble in detecting its seat.

TREATMENT.—Lameness is usually present only during the inflammatory stage. When the exudate becomes ossified (converted into bone) the inflammatory action ceases, and lameness disappears, unless the enlargement be of sufficient size, or is so situated that it causes irritation to the suspensory ligament, or involves the joint. Hence treatment should be directed to allay inflammation as promptly as possible. Splint lameness often appears very suddenly. A horse may be driven a journey, going perfectly sound, and, after a rest, when taken out to drive home, may go very lame when asked to go faster than a walk. A horse lame from splint should be given rest. The seat of the trouble should be showered with cold water frequently for a few days. This is often all that is needed, and the patient will go sound, and, after a few months, or longer, no enlargement will be noticed. In other cases lameness is more persistent, and it is necessary to apply a blister in the ordinary way, the details for which have already been given in a former article. A second or third blister is sometimes necessary, and in some cases allying by a veterinarian is necessary. When lameness does not exist it is seldom necessary to heat. Friction or blistering has a tendency to hasten absorption of the enlargement, but in most cases nature effects this without extraneous assistance. As a simple matter of fact, there are few horses that have done considerable road work, that are free from splints, although they may never have gone lame, and there is no visible enlargement.

Increasing Lamb Profits

The farmer may increase his profit on lambs marketed during July, August and September by castrating them. The fact that native lambs—or those raised in the eastern and middlewestern sections of the United States—are inferior to western lambs is due partly to the fact that a high percentage of these lambs are castrated when marketed.

Uncastrated lambs when marketed in late summer are never in as high condition of flesh, but they will consume as much feed per pound of gain as will be consumed by castrated lambs. Uncastrated animals are known on the market as "cull lambs."

The Pennsylvania State College School of Agriculture and Experiment Station castrates lambs when they are three or four weeks old. Docking and castrating should not be practiced at the same time, as the combined shock is considered too severe. Castrated lambs should be placed in dry, well-bedded quarters, to guard against infection.

It is not necessary to castrate hot-house lambs or lambs marketed early in the spring. When they are marketed at such an early age the sexual capacity does not affect growth or condition.

Cow Bawls

F. SCOTT.

Did you say there is no use to wash udders and teats before milking? Take one pint of warm water and a snowy white rag and sponge off the sack and teats when you think there is no use of it, and then rinse the rag in the water and see how dirty it is. If the bath is neglected you are sure to get a part of this filth in the milk.

This experience will teach you how necessary it is to do certain things to procure clean milk. Cows should not eat while milking, as their moving causes a fine dust to keep constantly sifting into the milk.

The switch of a cow's tail creates a dust. My plan is to tie her tail to her leg while milking.

Clean stables at least twenty minutes before milking, giving the dust time to settle—a part of it on the cows.

Cleanliness all the way through in caring for milk is the first step for success, but there are several subsequent ones if you follow the trail all the way to butter making.

Ohio.

Dispersal Sale of a Herd of Quality

The York & Few Herd

SALE TO BE HELD ON THE FAIR GROUNDS, WEST CHESTER, PA.

Thursday, June 15, 1916—One Day Only

This herd is made up of fine individuals, all young (only three above 7 years old); many from large record dams and many with excellent records. Among these are:

Princess Robsart Ormsby 3½ yrs., 25.49-lb.
Lady Nephelie Hengerveld 2½ yrs., 24.49-lb.
K. C. P. Beryl Altoana 26 mo., 18.65-lb.
A heifer whose dam is a 29-lb. granddaughter of Belle Korndyke, and whose sire is a son of Colantha Johanna Lad.

A daughter of Korndyke Abbecker, from a 22-lb., 2½ yr. dam.
A heifer whose dam has a record of 26.62-lb.

In the sale will be daughters of several of the leading A. R. O. sires, among which may be mentioned:

A daughter of Korndyke Butter Boy from a daughter of King of the Pontiacs.
A daughter of King of the Pontiacs, from a daughter of Christopher Columbus.
A daughter of King Segis Pontiac from a daughter of King of the Pontiacs.
A daughter of Korndyke Abbecker, from a daughter of King of the Pontiacs.

This sale will also include granddaughters of such noted sires as:
Aaggie Cornucopia Johanna Lad.
King Segis Pontiac.
Mercedes Julip's Pieterje's Paul.
King of the Pontiacs.

In the herd are a few extra good offerings in young bulls, especially attractive being a pair of twin sons of Tidy Abbecker Prince, from a 23-lb. daughter of King of the Pontiacs.

Mark down the Date and Place—Thursday, June 15—One day only
The Fair Grounds, West Chester, Pa.

Auctioneers: Kelly & Baxter
For Catalogue Write E. A. Hutchins, Sale Manager, Binghamton, N. Y.

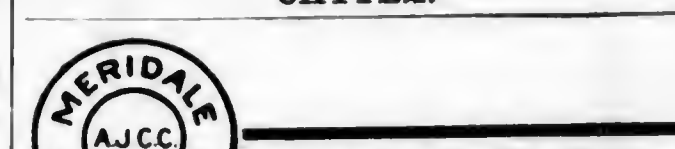
SELDOM SEE

a big knee like this, but your horse may have a bunch or bruise on his Ankle, Hock, Stifle, Knee or Throat.

ABSORBINE

will clean it off without laying the horse up. No blister, no hair gone. Concentrated—only a few drops required at an application. \$2 per bottle delivered. Describe your case for special instructions and Book & K free. ABSORBINE, JR., antiseptic liniment for man and horse. Relieves Painful Swellings, Bruises, Sprains, Glands, Gout, Wens, Blisters, Varicose Veins, Vasculectic, Old Sores, Allays Pain. Price \$1 and \$2 a bottle at drug stores or delivered. Manufactured only by W. F. YOUNG, P. O. F., 25 Temple St., Springfield, Mass.

CATTLE.



Meridale Jerseys

A choice lot of breeding bulls, ready for service in the fall, are offered from the Meridale herd at attractive prices during the summer months. They are sired by bulls of wide reputation and out of Register of Merit dams. The blood lines back of them are described in "Meridale Jerseys," a copy of which will gladly be mailed on request.

AYER & MCKINNEY
300 Chestnut St., Philadelphia, Penna.

Guernsey Calves

We have a large herd of imported Guernseys and offer some choice calves for sale. Write for Sales Sheet.

ELMVIEW FARM, Scranton, Pa.
312 Scranton Life Bldg.

Keystone Farms

offer pure bred Holstein yearling and a d. bull culled out of high record cows and sired by Prince Segis Korndyke, Jr., No. 2664 and Segis Hengerveld Beta Lyons, No. 12480, both sires of superb breeding.

Prices C. A. Pratt, Le Raysville, Pa.

Jersey Calves

3 beautiful Jersey Yearling Heifers. Daughters of good parents. Also a splendid bull 10 mos. Also a fine Berkshire boar 6 mos. W. F. McSparran, Furness, Pa.

REGISTERED CHESTER WHITE hogs and Jersey cattle for sale. H. M. Davidson, R. 2, Tarentum, Pa.

Pedigreed Duroc Jersey pigs 85. Champion Collier pigs 85. Barron Young 8 week's, C. W. Leghorn Pullets 60. ALTA Vista Farm, Darlington, Md.

Shetland Pony

Pure Shetlands, all ages, also, Barren prices, pigs and harness. Send stamps. Rossett's Pony Farm, Albany, Ohio.

DOGS.

FORDHOOK SOUTH COLE KENNELS—Puppies of choicest imported blood, full pedigree, at prices the farmer can afford to pay. W. Allee Burpee & Co., Burpee Buildings, North 6th St., Phila., Pa.



All These Ponies Given Free to Boys and Girls

"DOLLY"
Given to George



This is George Edwin Adams of New York State. He sent me his name and I sent him "Dolly." George says "Dolly" took the first Premium at the County Fair and he was offered \$150 for her, but he would not sell at any price.

Edwin Larson sent me his name and received "Early Bird." Edwin says "Early Bird" is a fine name for his pony because he and his friends go for early morning rides in the summer. Edwin lives in Worcester Co., Massachusetts.

"EARLY BIRD" Given to Edwin



Raymond Krueger lives up in northern Minnesota, where there is much snow. How ever, Raymond doesn't worry since I sent him "Trusty." If Raymond had not sent me his name, he wouldn't have "Trusty" now.

"TRUSTY"
Given to Raymond



"HEINIE"
Given to Clarence



Clarence Niemoller, Bartholomew Co., Indiana, sent me his name and I sent him "Heinie." Clarence says "I would not take \$1,000.00 for Heinie for I have more pleasure out of my pony than I would out of the money."

READ about these beautiful Shetland Ponies I have given away to boys and girls, all over the United States. Besides these eight shown here, I have given away more than 375 others. Now, I am going to give away several more Ponies—some of the finest Shetland Ponies I could buy—and I want every family that reads this paper to have an equal chance. If you are a boy or girl, send in your name, and if you are the father or mother of a boy or girl be sure to send your child's name. Remember, no charges of any kind and nothing to buy. Just send in your name.

"KIP"
Given to Anna Ruth



Here you see Anna Ruth Miller of Logan County, Ohio, and her new friend "Kip." Anna Ruth says she is glad she sent me her name because "Kip" is the finest pony in the whole state of Ohio.

It looks as though Ruth and "Mac" were Joe training for the circus. Ruth says he sticks his nose into a bag of pop-corn whenever he sees a pop-corn stand. Ruth Mead lives in Saline Co., Missouri. She sent in her name and received "Mac."

"MAC"
Given to Ruth



"PAT"
Given to Flossie



Little Flossie Meredith looks as though she is training for a circus, but she is just having good times with "Pat," the pony I sent her. Flossie lives in Jasper Co., Iowa.

Parents Please show this offer to your child and send in the Coupon. You will be interested in the free Pony Book I send and your child will enjoy it immensely and profit by it. I receive many letters from children telling me how they enjoyed reading the book. Besides, your child may win one of the Shetland Ponies I am actually giving away this season. Your child stands the same equal chance as any other child, no matter where you live.

Pony Book Free

Here is a wonderful Pony Picture and Story Book. It tells the stories of hundreds of children and the Ponies I gave them. It tells how the children won them, how the Ponies were shipped to them and the good times they are having with them. I will send a copy of this wonderful Pony Book free to every Boy or Girl who really wants a Pony and who sends in his or her name. Write your name in the Corner below and mail it to me right away.

The Pony King 604 Webb Bldg.
St. Paul, Minn.

Pony
Picture
and
Story
Book

Cut
out this
Coupon
and
Mail
To-day

Ernest L. Heckert of York Co., Pa., saw my advertisement and sent in his name. This is the pony "Dapple" and the buggy and harness I gave him. Ernest is driving here in the Memorial Day parade.

"DAPPLE"
Given to Ernest



THE PONY KING

604 Webb Bldg., St. Paul, Minn.
Send me the Free Pony Picture Book, containing pictures and names of children to whom you have given Ponies. Also send me pictures of the Ponies you are going to give away soon, and Certificate of Membership, so I can join your Pony Club and get a Pony

My Name is
P. O.
State..... R. F. D.

The Practical Farmer

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PHILADELPHIA, JULY 1, 1916

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Office as Second Class Matter

50 Cents Per Year
3 Years for \$1.00

Marketing Perishables via Parcel Post

By Earle W. Gage



or 150 miles, the cost would be the same. The farmer could well afford to defray this postage in order that he might receive the benefit of city prices, and the consumer would appreciate the freshness of such direct produce delivery, and would desire regular shipments.

The farmer can prosper more generally by profitably selling his crops and buying his supplies for cash. He should study more closely the economic conditions and avail himself of the opportunities for profit in selling. With a little enterprise and farsightedness, the long, hard trips to town and the long waits there for uncertain buyers may be largely done away with, by securing regular customers for the various products of the farm, to whom shipment can be made by parcel post, and from whom the price will be collected on delivery of the goods. If the price in any city within 150 miles of the farm be two cents in excess of the local one, the farmer can afford to pack and mail his produce. But the price is usually many cents over the home price.

Postmaster-General Albert S. Burleson, himself a farmer, who has advanced the postal system to more completely meet the requirements of modern agriculture, sees a great possibility in the parcel post for the farmer. He says: "The great value of the parcel post market in relation to agriculture lies in its capacity both to stimulate production and to prevent waste. Millions of bushels of garden crops and fruits, that would have spoiled and rotted on the fields of every state, should be picked up by the parcel post and hurried to quick markets in every city and town. Millions of bushels of vegetables and fruit, that never would have been grown under former market conditions, will be drawn from the earth by the attraction of the parcel post market when the farmers of the United States come to a full realization of the mighty agency of distribution that has been provided them through their National Government. Such knowledge when wisely utilized by the producer must have a



The kind of asparagus to pack in parcel post shipments—and the kind to sort out

THE American farmer fought for forty years to get the parcel post system. Today the 20,000,000 patrons residing along the Government's million miles of rural routes may be especially benefited. Every American farmer today may be a mail order house on his own account. He has exactly the same means of receiving and filling orders that the mail order house has—the United States mail. The mail order house that ships its thousands of tons enjoys no rebate and has no advantage that is not also shared fully by the up-to-date business farmer who markets his farm produce by parcel post.

The commodities which the farmer offers, unlike the majority of those offered by mail order houses, need little advertising. They are the necessities of life and are in the greatest possible demand. The farmer has these, and the people residing in the cities and towns must obtain them from him, either directly or indirectly. But the mail route is the direct one, minus the army of middlemen, whom producers and consumers should aim to eliminate wherever practicable. The means of communication lacking until more recently, is now at hand, and all that the producer and consumer need is to get acquainted. The newspaper, telephone and mails supply the connecting link, and the accomplishment of this friendship should not be an insurmountable barrier to quick sales and reasonable profits for the one and considerable savings and quick service for the other. Farmer and consumer alike have the means for closing the flood gates which have caused millions to be wasted in the simple distribution of foodstuffs, and if they avail themselves of the opportunity, it will be strange indeed if the fictitious quotations which middlemen have built up do not collapse, following the saving of a great amount of farm produce, and a lower cost of living for millions.

Already the parcel post has been made a hot trail by energetic farmers. Thousands of residents of New York City today look forward with anticipation to the delivery of their fresh eggs, pork, butter, apples, vegetables, and other articles formerly bought of retailers. The farmers supplying these are receiving better prices than abound in their home markets, while the

consumers are getting fresher products, full weight, and satisfactory service. This was not practical under the former express system of transportation. The genuine popularity of the marketing-via-mail system is exemplified by figures showing what the two systems have been doing. In 1912, the year before the parcel post went into operation, the express companies carried 317,000,000 packages, at 50 cents each, or three packages per capita; in 1915 express companies carried 280,000,000 packages at an average of 48 cents each, or an average reduction of only 2 cents per package when facing competition. This same year the parcel post carried 400,000,000 packages for the American people, at an average cost of 14 cents each.

The increase in the weight limit for packages within the first and second zones has served to multiply business. The mail today will carry from farm to city flat, baskets holding a week's supply for the family, and thousands of such hampers are daily being mailed, containing such bulky products as potatoes, onions, cucumbers and cabbages. Staples such as these, used in considerable quantities by every family, find a ready market in assorted lots.

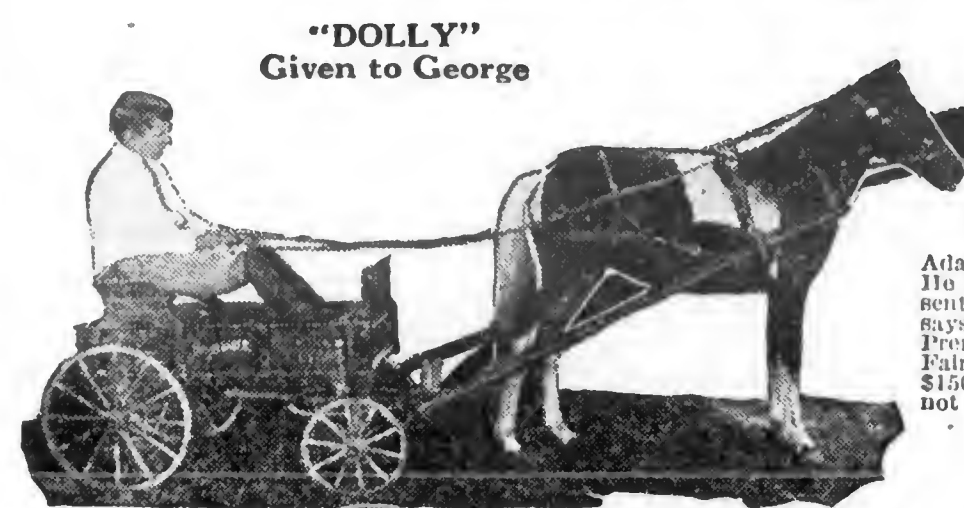
One hamper may contain an assortment of products designed, for instance, to supply one family for several days. There are families in cities that would be only too glad to receive twice or three times a week from the same farmer a hamper containing, for instance, 2 dozen eggs, 2 spring chickens, 2 quarts of strawberries, 2 quarts of green peas, half a peck of spinach, and a liberal supply of onions, radishes, lettuce and rhubarb. Such a parcel post basket of assorted vegetables, covered properly, weighing up to 26 pounds, could be forwarded within either first or second zones for 30 cents. Whether 10

marked effect in increasing rental and farm land values."

Fruit growers throughout the country find the parcel post a rapid and reasonable medium for marketing



All These Ponies Given Free to Boys and Girls



"DOLLY"
Given to George

This is George Edwin Adams of New York State. He sent me his name and I sent him "Dolly." George says "Dolly" took the first prize at the County Fair, and he was offered \$100 for her, but he would not sell at any price.

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"HEINIE"
Given to Clarence

Clarence Niemöller, Bartholomew Co., Indiana, sent me his name and I sent him "Heinie." Clarence says, "I would not take \$1,000.00 for 'Heinie' for I have more pleasure out of my pony than I would out of the money."

READ about these beautiful Shetland Ponies I have given away to boys and girls, all over the United States. Besides these eight shown here, I have given away more than 375 others. Now, I am going to give away several more Ponies—some of the finest Shetland Ponies I could buy—and I want every family that reads this paper to have an equal chance. If you are a boy or girl, send in your name, and if you are the father or mother of a boy or girl be sure to send your child's name. Remember, no charges of any kind and nothing to buy. Just send in your name.



"TRUSTY"
Given to Raymond

Raymond Krueger lives up in northern Minnesota, where there is much snow. He says "Trusty" is a fine name for his pony because he and his friends go for early morning rides in the summer. Raymond lives in Worcester Co., Massachusetts.



"KIP"
Given to Anna Ruth

Here you see Anna Ruth Miller of Logan County, Ohio, and her friend "Kip." Anna Ruth says she is glad she sent me her name because "Kip" is the finest Pony in the whole state of Ohio.

It looks as though Ruth and "Mac" were also training for the circus. Ruth says she likes her name because "Mac" is a fine name for a pony. Ruth lives in Saline Co., Missouri. She sent in her name and received "Mac."



"MAC"
Given to Ruth



"PAT"
Given to Flossie

Little Flossie Meredith looks as though she is training for a circus, but she is just having good times with "Pat," the pony I sent her. Flossie lives in Jasper Co., Iowa.

Children Don't put off this chance. Don't wait. Write your name and address in the corner below, cut it out and send it to me. I will then send you the beautiful free Pony Picture Book and you will have an equal chance to receive one of the Real Live Ponies that I am going to give away soon. You stand just the same chance as any other child, and it doesn't cost you a cent. Get a pencil and write your name now.

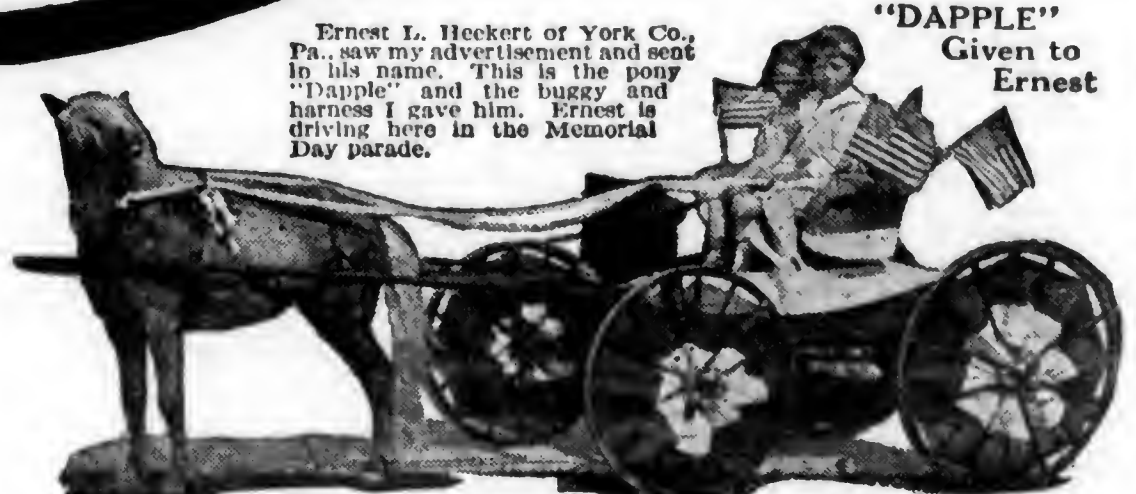
Parents Please show this offer to your child and send in the Coupon. You will be interested in the free Pony Book I send and your child will enjoy it immensely and profit by it. I receive many letters from children telling me how they enjoyed reading the book. Besides, your child may win one of the Shetland Ponies I am actually giving away this season. Your child stands the same equal chance as any other child, no matter where you live.

Pony Book Free

Here is a wonderful Pony Picture and Story Book. It tells the stories of hundreds of children and the Ponies I gave them. It tells how the children won them, how the Ponies were shipped to them and the good times they are having with them. I will send a copy of this wonderful Pony Book free to every boy or girl who really wants a Pony and who sends in his or her name. Write your name in the corner below and mail it to me right away.

The Pony King 604 Webb Bldg.
St. Paul, Minn.

Cut
out this
Coupon
and
Mail
To-day



"DAPPLE"
Given to Ernest

Ernest L. Heckert of York Co., Pa., saw my advertisement and sent in his name. This is the pony "Dapple" and the buggy and harness I gave him. Ernest is driving here in the Memorial Day parade.

THE PONY KING

604 Webb Bldg., St. Paul, Minn.
Send me the Free Pony Picture Book, containing pictures and names of children to whom you have given Ponies. Also send me pictures of the Ponies you are going to give away soon, and Certificate of Membership, so I can join your Pony Club and get a Pony

My Name is
P. O.
State..... R. F. D.....

The Practical Farmer

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Marketing Perishables via Parcel Post

By Earle W. Gage



or 150 miles, the cost would be the same. The farmer could well afford to defray this postage in order that he might receive the benefit of city prices, and the consumer would appreciate the freshness of such direct produce delivery, and would desire regular shipments.

The farmer can prosper more generally by profitably selling his crops and buying his supplies for cash. He should study more closely the economic conditions and avail himself of the opportunities for profit in selling. With a little enterprise and foresight, the long, hard trips to town and the long waits there for uncertain buyers may be largely done away with, by securing regular customers for the various products of the farm, to whom shipment can be made by parcel post, and from whom the price will be collected on delivery of the goods. If the price in any city within 150 miles of the farm be two cents in excess of the local one, the farmer can afford to pack and mail his produce. But the price is usually many cents over the home price.

Postmaster-General Albert S. Burleson, himself a farmer, who has advanced the postal system to more completely meet the requirements of modern agriculture, sees a great possibility in the parcel post for the farmer. He says: "The great value of the parcel post market in relation to agriculture lies in its capacity both to stimulate production and to prevent waste. Millions of bushels of garden crops and fruits, that would have spoiled and rotted on the fields of every state, should be picked up by the parcel post and hurried to quick markets in every city and town. Millions of bushels of vegetables and fruit, that never would have been grown under former market conditions, will be drawn from the earth by the attraction of the parcel post market when the farmers of the United States come to a full realization of the mighty agency of distribution that has been provided them through their National Government. Such knowledge when wisely utilized by the producer must have a



The kind of asparagus to pack in parcel post shipments—and the kind to sort out

THE American farmer fought for forty years to get the parcel post system. Today the 20,000,000 persons residing along the Government's million miles of rural routes may be especially benefited. Every American farmer today may be a mail order house on his own account. He has exactly the same means of buying and filling orders that the mail order house has in the United States mail. The mail order house ships its thousands of tons enjoys no rebate and no advantage that is not also shared fully by the up-to-date business farmer who markets his farm produce by parcel post.

The commodities which the farmer offers, unlike the majority of those offered by mail order houses, need little advertising. They are the necessities of life and are in the greatest possible demand. The farmer has these, and the people residing in the cities and towns must obtain them from him, either directly or indirectly. But the mail route is the direct one. The army of middlemen, whom producers and consumers should aim to eliminate wherever practicable. The means of communication lacking until more recently, is now at hand, and all that the producer and consumer need is to get acquainted. The newspaper, telephone and mails supply the connecting link, and the accomplishment of this friendship should not be an insurmountable barrier to quick sales and reasonable profits for the one and considerable savings and quick service for the other. Farmer and consumer alike have the means for closing the food gates which have caused millions to be wasted in the simple distribution of foodstuffs, and if they avail themselves of the opportunity, it will be strange indeed if the fitful quotations which middlemen have built up do not collapse, following the saving of a great amount of farm produce, and a lower cost of living for millions.

Already the parcel post has been made a hot trail by energetic farmers. Thousands of residents of New York City today look forward with anticipation to the delivery of their fresh eggs, pork, butter, apples, vegetables, and other articles formerly bought of retailers. The farmers supplying these are receiving better prices than abound in their home markets, while the

consumers are getting fresher products, full weight, and satisfactory service. This was not practical under the former express system of transportation. The genuine popularity of the marketing-via-mail system is exemplified by figures showing what the two systems have been doing. In 1912, the year before the parcel post went into operation, the express companies carried 317,000,000 packages, at 50 cents each, or three packages per capita; in 1915 express companies carried 280,000,000 packages at an average of 48 cents each, or an average reduction of only 2 cents per package when facing competition. This same year the parcel post carried 400,000,000 packages for the American people, at an average cost of 11 cents each.

The increase in the weight limit for packages within the first and second zones has served to multiply business. The mail today will carry from farm to city flat, baskets holding a week's supply for the family, and thousands of such hampers are daily being mailed, containing such bulky products as potatoes, onions, cucumbers and cabbages. Staples such as these, used in considerable quantities by every family, find a ready market in assorted lots.

One hamper may contain an assortment of products designed, for instance, to supply one family for several days. There are families in cities that would be only too glad to receive twice or three times a week from the same farmer a hamper containing, for instance, 2 dozen eggs, 2 spring chickens, 2 quarts of strawberries, 2 quarts of green peas, half a peck of spinach, and a liberal supply of onions, radishes, lettuce and rhubarb. Such a parcel post basket of assorted vegetables, covered properly, weighing up to 26 pounds, could be forwarded within either first or second zones for 30 cents. Whether 10

marked effect in increasing rental and farm land values.

Fruit growers throughout the country find the parcel post a rapid and reasonable medium for marketing

their produce. The ordinary peach basket, for illustration, weighs not too much to be included in this list. Inasmuch as 50 pounds is the limit for local delivery, the rates being 5 cents for the first pound and 1 cent for each additional 2 pounds, the cost of sending fruit or vegetables via this route is both economical and quick. This limit includes the 150-mile zone.

The Department of Agriculture has published bulletins for farmers and carried on educational campaigns looking toward the expansion of the usefulness of the parcel post to producer and consumer. Farmers' Bulletin 594, "Shipping Eggs by Parcel Post," and Bulletin 703, "Suggestions for Parcel Post Marketing," tell the farmer and gardener explicitly how to adapt means and methods for successful operation under this transportation.

The Department points out that the important item to be considered after producing a satisfactory, high-class product, is the container in which it is to be sent. The postal system demands that these containers meet the specifications of the Department. Those recommended have handles, which allow clerks to handle them swiftly without undue injury to contents. A bamboo basket serves this purpose and may be used for a long period, the consumer mailing it back to the farmer after each trip.

The ordinary split baskets are also useful, and when purchased in large lots are economical. These may be sent back to the farmer in dozen lots, the postage being a very small item. The corrugated pasteboard cartons are employed by many farmers, and inasmuch as these are made of a variety of types and sizes, the producer can select those meeting his requirements. If desired, these may be returned in knock-down form.

As in all other forms of distribution, proper grading is necessary. A grower could scarcely afford to pay postage on culls, and his future demand will rest entirely upon the satisfaction his orders give from time to time. Proper packing for parcel post marketing is of primary importance and cannot be over-emphasized. All packs must be uniform and of full measure. Very little practice will be needed to become expert in the art of grading and packing.

Just as the farmer must have a price in addition to the ordinary one, so also must the consumer get better goods than he ordinarily would, which means an equitable distribution of the difference between the usual farm price and the standard retail price is necessary. Of course, a grower would be expected to give a consumer a better quotation on weekly assorted orders than upon hit-and-miss orders, and both prices would be governed by the price prevailing at the consumer's and farmer's markets. To obtain the consumer's business the farmer must necessarily give a better grade of produce for the same price than his competing retailers of the city, else there would be little use of the city man buying by mail of the farmer.

The Department of Agriculture finds that there is a real desire on the part of millions of city consumers to purchase their household supplies via mail, but that to date there has existed little interest on the part of farmers in meeting this demand. Farmers and gardeners must learn the methods employed in mail ordering, which would at once automatically create faith in the consumers regarding the dependability of the grower.

By visiting a neighboring city, the farmer may become acquainted with dependable consumers, whose credit is well established, such as merchants, bankers, office men and the like, and whose accounts might be run to the end of each month, or who would be willing to remit weekly for produce sent them. By visiting the housewives it would be possible to secure knowledge regarding the needs of each household, while the ladies could drop the farmer a postal card the first of each week, placing an order for goods desired. But a definite understanding should be established between producer and consumer regarding how money is to be remitted, claims for damaged goods settled, and the preservation and returning of container.

The great development which has taken place in the mercantile world as regards mail order business, encourages us to believe that a similar development of trade relations could be effected between farmers and consumers if the two become acquainted. "People everywhere have gained the mail order spirit, and the fact that many city consumers are suffering from short measure and poor quality goods would increase

the value of a direct-from-the-producer system's popularity. The point which makes the strongest appeal to the consumer is that he is able to secure by mail a fresher, brighter, more attractive, and thus a better product than he could buy on his local market for the same money. The farmer should always remember that the appearance of fruit or vegetables is the strongest point in making a sale, and that he should not send by mail an article that he would not want to deliver personally; it does not pay any one to market anything but standard and fancy produce, while the surest way to establish a dependable, continuing, and increasing business is to forward nothing but strictly reliable and satisfactory produce; in other words, the same kind you yourself would desire if you were at the receiving end of the sale.

On the city markets the consumers judge all produce by appearance. That which looks stale and withered is passed by for the fresh, and so appearance is the big factor in farm produce selling everywhere. Produce must be of high quality, clean and attractive, carefully and neatly packed, of one variety, and, as far as practicable, uniform in size, shape, color and quality and last, but not least, carefully packed so that it will arrive in as good shape as when started on its journey.

Every producer contemplating entering this new venture should secure every government bulletin possible, learn the needs of his markets, and prepare to enter the business in the spirit of the modern merchant, and success is sure to crown his every effort if he uses common sense and adheres to the principle of "a square deal."

(EDITORIAL NOTE.—We believe this article will commend itself to the thoughtful consideration of our readers and lead to some interesting experiments. Perhaps some of our farmers have already tried marketing their produce by parcel post; we will be glad to hear from such as to success attained.)



Well graded cucumbers (trade winners) versus "any old kind" (trade killers)

Eliminating the Obstacles in Dairying

By DALE E. ANDREWS

EVERY farmer who is milking cows and selling his whole milk or cream with an idea of making the greatest possible profit knows that there are certain obstacles in his way other than the high cost of feed and cows and the comparatively low returns in dollars and cents allowed him for his product. They have to do with the business of manufacturing his milk.

"Making milk" is a common expression and we may liken the dairy farmer to the manufacturer who is the owner of a factory in the city. It may be that you have never thought of yourself in this way, but nevertheless if you are a dairy farmer you are a business man. And there are good and bad business men in dairy farming just as in all other lines of business. You are a manufacturer just the same as the factory owner who makes your clothing or your machinery.

Your barn is your factory, your cows are the tools, the feed is the raw material that is to be converted into the finished product and your hired men are your employees. Other manufacturers are constantly on the lookout for more efficient methods of production, for the introduction of labor saving machinery that will speed up the factory or that will enable them to produce at a smaller cost by doing away with a part of the help now employed without affecting in any way the output of the plant.

As a manufacturer of dairy products you have trade and production conditions to meet and competition to overcome just like any other manufacturer. You must face the problems of your business just as all other successful business men are doing and always be on the lookout for ways to make your work easier—to do more with cheaper or less help—to improve your product and receive the top prices for it in the mar-

kets of the country. It is unnecessary to enumerate all the obstacles in the way of highest efficiency in the production of milk from your herd. Nearly every dairy farmer is up against the same obstacles, but many are experiencing much less difficulty in overcoming them today than they were a few years ago, due to the introduction of many labor-saving devices for the operation of the farm. But the one machine that has eliminated more obstacles of dairy farming than any other is the milking machine, now in successful operation on thousands of farms in all states of the Union.

The milking machine has eliminated the obstacle of inability to get good hand workers, the obstacle of inability to keep steady help, the obstacle of the high price of help, the obstacle of inability to keep the extra milking help profitably employed between milking times, the obstacle of inability to increase the size of the herd to take care of the big yield of farm crops, the obstacle of the difficulty in producing clean milk and many other obstacles of more or less importance.

The milking machine has proved itself under all conditions—it remains for the farmer to prove that he is capable of recognizing the value of this labor saving addition to his business equipment and to give it the chance that it is entitled to on his farm.

When the corn binder supplanted the old corn knife it soon came to be regarded as a necessity on the farm; when the cream separator proved its economic value over the old method of skimming cream it was soon recognized as a necessity for the dairy farmer; the threshing machine is now a necessity, since it has taken the place of the old-fashioned labor formerly done with the flail on the threshing floor; and just so is the milking machine taking its place as a necessity in the economy of dairy farming in America. The real need for a milking machine has existed for many, many years and experience has proved that

where a real need has existed the answer for that need has been found or developed. The first milking machines were crude and far from satisfactory. It took years to develop them, but during the past few years machines of several different makes have been perfected and placed on the market that are fully capable of performing the tasks that are put up to them.

There may be instances where milking machines are not doing what is expected of them today. But observation of hundreds of machines in operation in several different states and under all sorts of conditions, as well as the tests

conducted with the machines in state experiment stations throughout the country have proved very conclusively to me that the machine does not fail the dairy farmer. There are numerous instances, however, where the man has failed the machine. A visit to a farm in Wisconsin where a large herd of dairy cows are being milked, will illustrate this point. An expensive plant had been installed but was not being used at this time. The manager of the farm offered the explanation that they were furnishing certified milk to Chicago and that their sediment test was too high when they used the machine. Upon further questioning he explained that at times the teat cups fell off and sucked in some of the stable dirt to the milk. It does not require much managerial ability to have the teat cups of the milking machine stay on the cow, and this was a mighty flimsy excuse for discarding the machine. It is a careless habit of many operators to allow the teat cups to lie on the floor after being detached from the cow while the suction of the vacuum is still going on, but such a habit should not condemn the machine.

The same make of milking machine is being used on a neighboring farm, where 172 cows were being milked and the milk was being certified and sold in the same Chicago market. There was not a fault to be found with the machine in these great barns, and Manager Howard Green said: "Were it not for my milking machine I would be forced to go entirely out of business on this farm. The machine has enabled me to double my herd during the past year and I am now planning the addition of a hundred more cows, knowing that I shall have no trouble with the milking end of the business." Clearly an illustration of "the man behind the machine."

The writer visited the great Hershey Farms at Hershey, Pa., a couple of years ago. At that time the Hershey Farm Co. was operating a farm of nearly

(Concluded on page 272)

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JULY 1, 1916

A Square Deal All Around

It pays in the long run to be fair, financially, morally, legally and spiritually—with an emphasis on the latter. The man who gives a square deal to every one with whom he comes in touch is the man to whom people will tie.

Take this proposition in business: The manufacturer who puts his character and reputation and money into his product and backs it to the limit with them, will deserve and win the confidence and the support of those to whom his product appeals and for whose use it was intended. And conversely, it pays the buyer and consumer to thus place his confidence where it will not be abused.

To go a step further, the law should protect the producer who thus gives to the consumer a fair and honest equivalent for his money, but it doesn't always do it. And when it is proposed to do so, at once opposition springs up among dealers to whom the golden rule is a dead letter and fair dealing an unknown quantity.

These remarks are inspired by the study of a bill now before Congress, known as the Stevens bill, which proposes to protect the square producer against the "cut price" methods of the unfair middle man.

It is well known that in the selling of almost every trade marked article which you can mention, whose retail prices are fixed by the makers, unfair dealers will make a cut rate on some one or more of them, for the purpose of attracting trade, and then recoup the loss on the one article by selling other articles of unknown quality at a higher price than they are worth. It is a common practice in all the large cities and most of the smaller cities and country towns. It saves no money to the buyers of such cut rate articles on the average, and it does hurt the business of square merchants who sell all of their goods at a fair price—the merchants to whom the average buyer goes when he wants full value on all his purchases. Moreover, it injures the business of the manufacturer who has placed good value and square dealing behind his trade mark (or name) by reducing the price at which his goods are rated in the public mind (for no one ever wants to pay full price for an article which he has once bought or seen advertised at a cut price) to a point at which a fair profit cannot be made on their manufacture and sale. Frequently the manufacturer is forced to reduce the quality in his goods to meet the new price and therein the consumer suffers, too.

The Stevens bill proposes to safeguard the makers of trade marked articles by giving them the right to fix the retail price, which the law does not now give. It also safeguards the purchasers by providing that the producers who seek to take advantage of its provisions must not enter into combination with other makers of similar articles under other trade marks to agree on and fix an unfair retail price, and pro-

tects the public from any combination of producers which otherwise might be possible.

In a nutshell, it aims to give a square deal to the square manufacturer, the merchant and the consumer, and for that reason we commend its passage.

Our Good Crop Outlook

IN spite of a very peculiar season thus far, we farmers in the Middle Atlantic States have much to be thankful for in our 1916 crop outlook. The season is late and we have had much cool and cloudy weather, but with all have had plenty of moisture and a fair amount of sunshine. The Government's June crop report indicates that we have been blessed beyond our brothers West and South, for whereas the indications on general condition of all crops on June 1st showed the entire United States to be 2.3% below the average for the last ten years, we in the Middle Atlantic States are considerably above the average—New York showing 7.5%, New Jersey 5.8%, Pennsylvania 6.9%, Maryland 4.4%, and West Virginia 4.6% above the average, while Delaware and Ohio are just about the average for the last ten years; and Virginia alone of all the states in our section shows below the average (1.4%).

By way of comparison let us consider the Pennsylvania forecast (as typical of the states in this section) as compared to the forecast for the whole United States. In wheat this season's forecast for Pennsylvania is almost up to the crop of 1915, whereas the June forecast for the entire United States is hardly more than two-thirds of last year's crop. In oats and rye there has been a shrinkage in the forecast for this year below the crop of last year throughout the country and the shrinkage in Pennsylvania is just about the same as the average for the whole country; whereas the forecast for the apple crop of the entire country shows a shrinkage of 4,470,000 barrels below last year's crop, the forecast for Pennsylvania shows an actual increase of 1,175,000 barrels above last year's crop; the outlook for the peach crop throughout the entire country shows a decided shrinkage from last year's figures and Pennsylvania just about takes its proper portion of this shrinkage. The condition of hay on June 1st shows a slight improvement throughout the United States over the average of the past eight years, but on the same comparison with the eight year average in Pennsylvania the proportional improvement is more than double that of the Nation, while the improved condition of pastures throughout the United States over the average of the past ten years is not nearly so good as the improvement in Pennsylvania over the same period of average.

All in all we have little to complain of in the Middle Atlantic States, and a great deal to be thankful for.

Concerning Farm Poultry

THE United States Department of Agriculture, through one of its many subdivisions, has made an accurate survey of several hundred farms in one of the Eastern Pennsylvania counties, within recent months. This survey embraced every detail of every farm visited by the surveyors. Out of all the farms surveyed, not one that carried poultry as a side line, an incident to general farming or as a means to profit, showed a loss on this branch of general agriculture.

This fact at once presents a condition not fully appreciated by all farmers everywhere. Farm poultry holds such a firm grip on the farmer in general that the Pennsylvania State Department of Agriculture has, among its staff of farm advisers, qualified men whose time is solely devoted to visiting farms, keeping poultry with a view to bettering conditions. One of these advisers on poultry has visited, in two years, thousands of farms, at the request, in most cases, of the owners, to make improvement.

Combining the findings of the federal surveyors and the fact that some farmers are asking assistance from the state advisers, we arrive at the conclusion that the farmer does not, in all cases, appreciate the poultry business on farms to the extent that will point the wide open way to a fixed and highly satisfactory profit.

Poultry on farms is not a necessary evil; it is a necessity because it is profitable. It is the more profitable the better it is handled. Take out of the poultry business that portion of the fowl population of this country located too far from railroad centers or facilities for marketing, and the low, yet farm-profitable, average of 70 eggs per hen will immediately jump to at least 120 eggs average. Given an investment on such buildings as can be erected in spare time, by the farm labor at hand, with low cost labor-saving devices for feeding, and the hen will, in one year, return

every cent expended and then show a little profit, because 10 dozen eggs will bring at least \$2.00, enough to house and feed each layer.

The Federal Government surveyors found that all farm poultry was profitable; that the profit began low with a few hens and rose rapidly on an even grade up to 200 hens. Over 200 hens showed a descending profit up to 1000, the profit on more than this number jumping rapidly upward.

Every farm is entitled to its quota of poultry—every farmer owes it to his investment to so farm poultry that its profits shall come as a natural order of things. Poultry and its products, eggs, meat, feathers and fertilizer, are necessary to dairying, fruit, or to any crop. Eggs, meat and feathers produce money and the fertilizing value of poultry droppings is unquestioned. Skim milk has a natural outlet in the piggery and a naturally profitable one with poultry, producing as many eggs as any other form of protein. Poultry equipment and buildings, purchased and erected out of poultry profits, add to the farm's value; ten years' income from 200 hens will work wonders in pulling the sting from borrowed farm capital. There are today in these United States a glorious list of farm mortgages cancelled with eggs, and every year that is to come will add to this list in greater proportion and will multiply the glory of the hen.

Giving the Boy a Business Start

IN the problem of interesting your boy in the business of farming so as to keep him on the farm, has it ever occurred to you that what he needs is an insight into the methods by which the farming business is made to pay, and a chance to try the experiment in a small way for himself? In connection with this thought the "Pig Clubs" which have been started among farm boys in many states are well worth considering for your boys and their neighbors.

Don't start by giving your boy a pig, nor letting the neighbors give their sons swine. Let the boys buy their own pigs; that will take the idea of "charity" out of the scheme and start the boy in a business way, as any business farmer has to start; the idea that he gets his start in business as a gift, whereas grown-up farmers get little presented to them, takes one of the best elements for the boy out of the scheme—that of farm finance. When the club is formed the first move is to let the boys take their whole plan to the local banker; the boys who have already saved up enough money to buy their first pig won't need much financial backing, but the members of the club who have not the means to this start should find little difficulty in borrowing from a progressive banker (with their parents' consent and backing, of course) the funds necessary for the original investment. Bankers are quick to see that the pig club is a means of materially improving rural conditions, interesting the boys in farm work and instilling in the rising generation the first principles of success in business farming; the rivalry among the boys of a club will keep the youngsters faithful to the venture and bring the ultimate success that makes the banker sure of the payment of his loan; the boys he has helped to get started in the hog business will soon get on their feet financially and before many years will be making big shipments of hogs to market each year—thus extending the business of the bank in a profitable direction.

If you and your boys haven't tried the "Pig Club" idea, think it over seriously. The United States Department of Agriculture at Washington can give much needed information and help in the forming of such a club, and will be glad to do so on application.

Bulletin Helps for Farmers

"Potato Diseases" is the subject of Bulletin No. 140 issued by the Agricultural Experiment Station at Pennsylvania State College (State College, Pa.) This bulletin is written by C. R. Orton and exhaustively treats on the various diseases from which the potato suffers in this section; it is quite fully illustrated and altogether is a valuable bulletin for potato raising farmers. It is, of course, offered free on request.

Throughout the Middle Atlantic States fruit growers have experienced considerable trouble periodically from the cherry leaf-beetle—so much so that the United States Department of Agriculture has made an exhaustive study of the subject based on the 1915 outbreak, principally in the Lake Erie grape belt; the result of this investigation is set forth in Bulletin No. 352, by R. A. Cushman and Dwight Isely, deciduous fruit insect investigators for the Department. Any of our readers who have been annoyed by this insect will do well to send for this bulletin.

THE GARDEN

Edited by W. F. MASSEY

All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

The Midsummer Garden

Do not leave any vacant spot in the garden. As soon as any early crop is harvested clean up the ground and get in a succession crop of some sort.

The medium early varieties of sugar corn may still be planted and make ears for use before frost. In fact, down here in southern Maryland I can plant as late as the middle of July.

String beans can, of course, be planted for a succession, also the summer radishes. Cabbage seed sown now in a rich bed and pushed along with liberal watering will make better heads for winter than if planted earlier, as they will not head until November, and those then not well headed will head after being buried. Here I do not care to have them head until the middle of November, as there is danger of earlier headed ones bursting. Of course, seed should be sown earlier for those needed in late summer and early fall, but for winter keeping the late sowing is best.

Keep the garden absolutely clean of weeds and grass, for a garden allowed to get weedy becomes a nursery for cutworms to bother you in the spring. A garden kept absolutely clean is never so much infested in the spring with these pests.

I always try, and have now plenty of late tomato plants to set early in July in order to have a late crop full of well grown green ones when frost comes, for as I have before said, I wrap these in paper and store in a cool, dark cellar to be brought out a few at a time into the kitchen window to color up, and give us slicing tomatoes until Christmas, and far better ones than the skinny, tough Florida product.

If you are training tomatoes to stakes, keep them well tied up, and watch the suckers starting at the root and in the axils of the leaves, and keep them pinched back. I train these to a stake with one stem left to grow on the tomato plant.

This year I am testing the difference between the stake training and letting the vines tumble. I have rows trained to stakes and an equal number of rows planted wider apart and allowed to take their natural growth. I believe that the ones on the stakes will ripen earlier, as at this writing they are nearly so, but the others will give the heaviest crop. My second planting of tomatoes from seed sown in the open ground, to take the place of the early ones, was made June 8th. These will be at their best when the early ones are getting inferior.

Seed of the rutabagas and the long white French turnips should be sown in July, but for the strap-leaved and general class of turnips August and September will be better. The strap-leaved turnips sown too early will get pithy before cool weather. The White French is one of the best and sweetest of turnips. It belongs to the rutabaga class and needs a longer season than the strap-leaved varieties.

Strawberry runners can now be potted for fall planting. I do not crawl around and set pots for the runners to root in, but let them make a few white roots, and then lift them carefully and pot them in pots of the 2½-inch size and pack them closely in a frame under a lath screen and attend to watering them, and get fine plants for fall setting.

Stop cutting asparagus and let all the growth come. Add some good fer-

tilizer along the rows and cultivate clean. Cut out all stalks that set berries, to prevent the growing of seedlings in the bed. The heavier you feed the asparagus plants now and the cleaner you cultivate them the stronger crowns you will have for the next season.

The same is true of strawberries after fruiting. Fertilize and cultivate clean, and get strong crowns for next season's fruiting.

Curled endive will now come in very handsily to take the place of lettuce. The plants should have been transplanted in June, and when well grown tie them up to blanch. Take care that they are dry when tied up, for if wet they may rot. I also use some cardboard plant protectors intended to protect tomatoes and other early-set plants. These set over the heads of endive will blanch the head nicely.

I usually stop pulling the rhubarb before the first of July, for after that the plants need all their foliage to complete the season's growth. We put up a lot for winter by simply cutting it in pieces and packing in glass jars and filling up with cold water and screwing the top tight. Only this and nothing more, and it keeps well, for we had it all last winter just as good as that fresh from the garden.

The thinnings of chard when the leaves are about the size of the palm of your hand, make the finest greens, and no one could distinguish them from spinach. As the leaves grow larger we pull them just as we do rhubarb, and cook the leaf stalks separately from the leaf blades, and make two dishes from one plant.

Spraying tomatoes with Bordeaux mixture is important to prevent the leaf blight. Spray the eggplants with lead arsenate 1 part to 160 parts of water, with 1 part of corn syrup to make it stick, for the Colorado beetles are even more fond of eggplants than potatoes.

The green peas that get too old for use green can be all gathered and shelled and spread out to dry, and they will make fine soup in winter.

A Garden Compost, etc.

There is nothing more important in the garden than having the stable manure used thoroughly fine and rotted, for manure fresh from the stable in the spring is poor stuff for the garden. Hence I cover my garden all over in the late fall thickly with manure, hiding every spot of soil and letting it lie and rot all winter and be dug in in spring.

Then in the frames in the fall, and in the greenhouse, we need a well prepared compost. My compost pile for the fall and winter has been prepared in the following way: Green grass sods were cut about 2 inches thick and a layer placed, grass side down, in a square area of about 10 feet. Manure was spread over this about the same thickness. Then another layer of sods and manure, building up in this way a square flat pile and finishing off with manure. This heap is now being chopped down, cutting down perpendicularly from top to bottom and mixing it well and piling it in a similar heap. During this second piling I add a liberal dressing of raw bone meal to each 6-inch layer, using a 200-pound sack on a heap of about 2 tons of compost.

About the last of August the whole will be turned again, and by the time it is needed in the fall there is a pile of

fine brown mold ready to grow anything to perfection. The cold frames get a layer of nearly 6 inches of this compost ready for setting the lettuce plants and the cauliflowers which I head in the opened frames in the spring.

The lettuce, after growth starts from the transplanting, will get a light dressing of nitrate of soda between the rows to push the plants along for Christmas. Another compost bed is made with all the green refuse from the garden—green pea vines, string bean vines and all the vegetable refuse from the kitchen. Lime is sprinkled freely over this as the refuse is added, and it is kept going all summer, and by next spring, after being turned over several times it, too, is a black decayed mass and is spread on the garden generally.

It is an important matter to keep up the humus content in the soil, and as in a garden we cannot grow the recuperative crops of the farmer we must use all the vegetable matter made for this purpose. No garden waste is ever thrown away. Even the corn stalks are chopped up, roots and all, and piled with lime over them. As it takes these longer to get completely decomposed they are not put with the other refuse, but in a pile by themselves, and by the following midsummer they can go back on the garden.

Eight years ago my present garden was a sandy waste, covered over with every weed that is common here, and by no means fertile. It is now a black sandy loam, far more retentive of moisture and standing drought far better than it formerly did, and growing the finest crops of all sorts, both vegetables and flowers and bulbs.

I have lifted and cured my hyacinths and I have never seen finer bulbs come from Holland. I have them by hundreds in separate named varieties. And as to tulips, no one ever saw finer. I have just weighed 8 of the finest and they weighed a pound. This means very big tulip bulbs. I have had samples sent me from the Government bulb garden in the State of Washington, but never any so large as I have lifted this summer. In like manner the various varieties of narcissus are of unusual size, and Lilium Candidum bulbs grown here make twice as many flowers as the French bulbs. I counted one recently with 15 flowers, while the French ones seldom make over half a dozen.

Narcissus bulbs are now being produced in Virginia by the millions and the northern florists have found out that they force earlier in winter than the imported ones. The time will soon come when we will be growing here many of the varieties of bulbs that are now imported.

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Care of Asparagus

The cutting season for asparagus ordinarily extends from May 1 to about July 1, or about eight weeks in all. When weather conditions permit daily cuttings should be made.

If insects, and especially the asparagus beetles, are troublesome the Pennsylvania State College Experiment Station recommends leaving one uncultivated row of plants as a trap along one side of the field. The beetles will collect on these plants, and many will be killed by spraying with arsenate of lead in the proportion of 2 pounds to 50 gallons of water.

At the close of the asparagus cutting season the station recommends the application to the plants of 1500 to 2000 pounds per acre of a high grade commercial fertilizer and from 20 to 30 tons of manure. After plants have been thoroughly disk harrowed they should be allowed to grow. Cultivation from time to time is advised to keep the ground in good physical condition and keep down weeds.

After the first few frosts in the fall asparagus plants should be moved and the tops burned as a means of destroying insects and diseases present.

It is in the care of asparagus after the cutting season is past that too many growers are lax.

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HORTICULTURAL

Edited by C. A. McCUE

The Currant

The currant first came into cultivation about the middle of the seventeenth century. The red currant grows wild over all northern Europe and Asia, and was most likely first cultivated by the Danes and Norwegians. The fruit, however, seems to have first obtained prominence in France. It is also a native of North America and was probably cultivated early in the history of this country, although no authentic records are available.

In 1909 there were grown about 7800 acres of currants in the United States, as against 12,800 acres in 1899. The culture of the currant is centered largely in the Middle Atlantic and North Central States. It is essentially a cool weather crop and it fails to prosper in climates that are subject to long dry spells. It thrives best in cool, moist soils; clay loams give best results, although good crops may be had on stiff clays or strong, moist, sandy loams. A cool northern exposure or partial shade seems to suit the plant. Near its southern range it is often grown in orchards as a companion crop. The farther south you live the higher the elevation at which you should plant the currant.

The currant is usually propagated by hard wood cuttings made from well ripened wood of one season's growth. The cuttings may be taken either in spring or fall, but are usually taken in September. They may be planted at once, but they are usually calloused over first. This is done by tying the cuttings up into small bundles, burying them in the ground but ends up and covering with about 2 inches of soil. This callousing process is usually over before the ground begins to freeze. The cuttings are then taken up and set in the nursery row. If cuttings are not taken until spring they should be taken early, before growth has started. A currant cutting should be from 6 to 8 inches long and the basal cut is made just beneath a bud. In planting one or two buds are left above the surface. When planted in the fall the cuttings should be protected by a straw mulch during the winter. Green wood cuttings may be made, but they are used only under special conditions. New plants may also be grown from layers. New varieties originate from seed.

Currants need a thorough soil preparation. The land should be manured heavily with well rotted manure before plowing. Plowing should be deep and in case of stubborn subsoils the subsoil plow should be used. A constant water supply is so necessary for the well being of the plants that every precaution should be taken to provide a loose, friable soil that is filled with humus and of great moisture holding capacity.

Plants may be set either in hills or in rows. The common system is in rows 6 feet by 3 feet in the row. In the hill system the plants are 5 feet apart each way. The actual setting of the plants is done by plowing furrows one way of the field and marking across the furrows with any convenient marker. The plants are set at the intersections, and against the land side of the furrow. The earth is drawn about them and firmly tramped by the feet. A firm soil about the roots is essential. Loose soil is left at the surface. The remainder of the furrow is gradually filled in by subsequent cultivation. One-year-old plants are usually set. They suffer but little check from transplanting.

On account of the earliness with which

the currant starts growth in the spring it is better to plant in the fall; but if the winters are very cold and dry, planting had best be deferred until spring.

Cultivation should be shallow, as the currant is a shallow rooted plant. The practice of plowing the currant patch each spring is often attended with disaster. If good cultivation has been practiced during the summer the soil can usually be put into good condition the following spring by a cultivator or one-horse disk. If mulching material can be obtained cheaply, mulching is the preferable way of handling the plantation. Mulching not only conserves moisture, but also keeps the soil cool and the fruit clean. In large plantations shallow cultivation must be relied upon.

The currant is a rank feeder and must be well fed if it is to prosper. The root area is small and the roots largely fibrous, hence the plant must have a liberal food supply close at hand. Stable manure in liberal amounts gives best results. Usually it is best to reinforce the manure with potash and phosphoric acid. Wood ashes are good fertilizing materials for the currant patch. The currant is supposed to be a heavy consumer of potash. A biennial application of 15 tons of stable manure, 200 to 300 pounds of muriate of potash and 500 pounds of acid phosphate per acre should be sufficient for any currant plantation.

Pruning is often neglected, yet large yields cannot be maintained from a currant patch without thorough and good pruning. The currant bears its fruit upon both one and two-year-old wood, but mostly on the latter and on short one-year-old spurs on older wood. Usually the younger the wood the finer the fruit. In annual pruning it should be the aim to gradually remove the old, and encourage the production of young wood. All wood older than 4 years should be kept cut out as far as possible. This is not a difficult matter to do when the bush form of training is used.

The forms of training used are both the bush and the tree, but the latter has been practically discarded on account of the attacks of the currant borers and the greater difficulty of renewing young wood. In training to the tree form a single stem is allowed to develop above ground and about six shoots allowed to grow from this. These shoots are allowed to come out at any desired distance above ground, say 8 inches to a foot. (Currants so trained are often sold by nurserymen as tree currants.)

The side branches are cut back 4 to 6 inches each year until a good bush is grown; afterwards they are cut each year to two or three buds and all lateral shoots are cut back to within a couple of inches of the older wood. Plants trained to the tree form are often seriously injured by high winds, the plants being so shallow rooted that they are easily overthrown by the wind. The best method of training is to allow four to six main stems to grow up from the ground and renew them from time to time, with vigorous shoots that have come up from the crown. The young growth should be headed in each year. The best fruit spurs are usually near the base of the shoots, so vigorous heading in is practical. Summer pinching back is sometimes practiced, but seldom on a field scale. The currant readily lends itself to training on a fancy scale.

The fruit should be picked only when dry. If picked wet it will quickly mold. The berries should never be stripped from the stems, but the entire cluster

should be picked. Berries stripped quickly spoil and the juice runs freely and makes a very unsightly package. For home use the currant is usually left to hang upon the bushes until dead ripe. For marketing and shipping purposes the fruit must be picked while it is still firm. The nearer to market the riper the fruit may be allowed to get before picking. Currants are usually marketed in quart boxes the same as raspberries.

The currant may be put to many uses, although it is used more for jelly than for any other purpose. Red varieties are preferred for jelly making. Currants also make excellent pies and sauces. For

pies they may be used either green or ripe. Currant juice makes a pleasing drink and is used as a flavoring at soda fountains.

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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

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The Seeding of Green Manure Crops

Now is the time to plan for the sowing of cover crops for the winter. If the rotation is such that the corn is not followed by a fall sown crop like wheat or rye it is well to plan to sow something that will protect the land during the fall and winter. I say "protect" in the sense that a green crop on the land during the winter conserves fertility and prevents the blowing of the sander soils and washing or erosion on rolling lands. These cover crops provide a source of green manure to be plowed under the following spring.

It is becoming well known that the growing of a clover crop once in four or five years is not sufficient to keep up the nitrogen supply of the soil or to make for the best physical condition. Hence a reorganization of the cropping system so that more legumes may be included in the rotation may be necessary in some instances. At any rate, no land should lie bare during the winter. It has been demonstrated many times that large quantities of plant food in the form of nitrates are lost by leaching during the fall and winter. Where a crop like corn or potatoes is tilled during the summer months the production of nitrates proceeds very rapidly and often far in excess of the needs of the crop. After the corn begins to ear in August comparatively little nitrogen is being used by the plant, and any excess is likely to be lost through heavy rains that may come later. If, however, the land is seeded, about this time to some plant that will begin active growth much of the nitrates may be taken up and conserved.

Among the crops best adapted for this purpose are crimson clover, vetch and rye. Crimson clover is not dependable north of central Pennsylvania, but vetch (winter) may be grown as far north as northern New York. Rye may be used almost anywhere, but is less desirable than the others, because it is not a legume and for that reason does not draw a supply of nitrogen from the air. It has the merit of being perfectly hardy and can be sown very late if necessary. There is no doubt that rye is able to take up considerable nitrates from the soil and in that way conserves this valuable plant food. We have found that a mixture of 2 pecks rye, 15 pounds of vetch and 6 pounds of crimson clover per acre gives a growth that enables the clover and vetch to pass the winter in better condition than when sown alone. At ordinary prices seed for this combination should cost from \$3 to \$3.50 per acre. Vetch seed, however, is high just now—practically double its usual price.

Crimson clover is generally the cheapest and best single cover crop. For sowing alone 15 pounds of seed are used per acre. It has been shown by the Delaware Agricultural Experiment Station that a good growth of crimson clover will gather from 50 to 75 pounds of nitrogen per acre during its fall growth. This is equivalent to the quantity of nitrogen contained in 300 to 450 pounds of nitrate of soda. Even if the clover is winter-killed, much of this nitrogen is left for the spring planted crop. Observing farmers in Delaware, where crimson clover is extensively grown, claim that the clover, where winter-killed, has the effect of improving the following crop. If the clover makes a good growth it is not so likely to winter-kill or heave out, hence the necessity for seeding early

enough in the summer to allow it to develop well before winter. Many prefer to seed the clover at the last cultivation of the corn, which may be quite early, depending on the advancement of the corn crop. Others sow in the corn at the time the plant comes into tassel. In the latter case a 1-horse cultivator follows the seeder, generally a Cahoon or some hand seeder. This working not only covers the clover seed, but also seems to create a soil mulch which is desirable for the corn. A cultivator with ten or a dozen small teeth is preferable. There is now on the market a combined seeder and cultivator which serves the same purpose. The writer has successfully seeded crimson clover and vetch by using a 5-horse 1-horse wheat drill in the standing corn. The clover seed is placed in the grass seeding compartment of the drill and the vetch in the grain compartment. In this way the vetch is covered more deeply (as it should be) than the clover.

If desired, rye may be mixed with vetch. Vetch has some advantages over crimson clover in that it may be covered deeper, which allows it a better supply of moisture and thus enables it to pass a period of drought at time of seeding to better advantage than crimson clover. Very often crimson clover will catch readily if sown in corn just previous to a heavy rain, even without covering.

If a fair supply of fertilizers has been used on the corn none need be applied for the cover crop.

These winter cover crops will not be needed if the corn is to be followed by wheat or rye, yet the soil may be benefited for these crops if the corn is seeded to cowpeas or soy beans. These plants do not make a full growth in the shade of the corn, yet will add considerable nitrogen to the soil if sown at the last cultivation. Tests have shown that 40 pounds of nitrogen per acre may be gathered in this way from the middle of July to the first of October, the time of seeding to wheat. It is quite true that the use of a cover crop of peas or beans between the corn crop and the wheat crop is not attended with uniform results from year to year, as the growth the legumes make is dependent largely on the season. Yet in general the practice will pay if the land is in need of nitrogen or organic matter. Just now peas are cheaper than for years past, and the cost of a green manure crop of this kind is relatively cheap. If sown broadcast in the corn 4 to 6 pecks of peas will be required; if drilled, 3 pecks per acre.

If the land has not grown crimson clover, vetch or cowpeas it will be well to inoculate the seed before planting. Commercial cultures can be procured from many seed firms and manufacturing chemists.

In general, land that is obliged to lie bare on account of the usual rotation should be put in a crop that will remain green over winter. Some cultivated crops are removed so late that it is impracticable to sow crimson clover or vetch; in that case use rye, as it may be seeded as late as Nov. 1st as far north as Mason's and Dixon's line and offer some protection during the winter. Very often these cover crops furnish considerable green feed as pasture during the late fall and early spring, which in a way detracts from the soil improvement value of the crop. Bare fields in winter are an indication of soil losses.

Harvesting the Wheat

The stage of maturity at which wheat is cut determines to a large extent the ease and security in handling the crop. If cut too green the sheaves shrink so much that it is difficult to handle them in hauling and threshing; if cut too ripe it is practically impossible to make a good shock or stack of the sheaves, because they are so bushy and spreading. To avoid these extremes wheat must be cut when the straw below the head has turned slightly yellow. With large areas it is not practicable to cut all of the crop at just the proper time, but it is probably better to cut a little early than to have some of the crop become dead ripe.

Cut at the proper stage of maturity, wheat is more easily shocked and the sheaves stand better than when too ripe. It is not realized how much wheat is lost each year by careless shocking. If the wheat shocks are not put up properly more or less of the sheaves get on the ground and the loss comes through rain. It will pay to go over the field soon after cutting and reset some of the shocks, and by replacing the caps after each storm damage may be greatly lessened.

Late Planted Corn

If for any reason corn was planted late or has not developed properly on account of unfavorable weather considerable aid may be given the crop by applying fertilizers as a top dressing at the first or second cultivation. If the proper amount of fertilizer was used when the corn was planted top dressing will not be necessary. Where only a small quantity of fertilizer was used at planting,

or where dependence is being placed on the decay of vegetable matter turned under the results in growth may be rather slow. Here is where a top dressing of a goods containing some soluble nitrogen will greatly stimulate the crop. The lack of the proper fertilizers will delay the maturity as much as ten days or two weeks. Prompt maturity means sound corn with little waste due to soft ears. Soft corn in most cases is due to an inadequate supply of plant food. In other words, the proper feeding of the corn plant means a shorter season is necessary to mature a crop.

Queries Answered

Buckwheat — Wood Ashes — Deep Plowing.—N. P. S. Illinois, writes: "Is buckwheat good for run-down land, or is it detrimental? I want to build up my land and have put clover in the oats this spring. I have hauled out a lot of wood ashes. Would you recommend applying ashes to a field that is to go into cowpeas and then into grass? Is deep plowing an advantage on light land? My renter claims you get up too much 'wild' land by deep plowing that will not yield well the first year. What is your opinion?"

Buckwheat is considered a good crop for loosening up soils that are inclined to be rather compact. The improvement is mainly that of making the soil more mellow and easily worked. Buckwheat will generally make a crop on a very poor soil.

The wood ashes should prove to be very beneficial in securing a stand of clover. If your land needs potash the ashes will further aid in growing the cowpeas and clover.

Deep plowing within certain limits is of decided benefit. However, it is not safe to turn more than one inch of new soil each year. Thus, if the land has been plowed only 5 inches deep in the past it should not be plowed more than 6 inches the first year. Deeper plowing may be practiced in the fall than in the spring, as the freezing and thawing of the upturned soil puts it in a better

condition to grow crops. If the soil is quite sandy deep plowing is essential in order to turn under and incorporate with the soil manures and other vegetable matter. The physical properties of a sandy soil may be improved in this way.

Canada Thistle.—C. Z. M. Pennsylvania, writes: "I wish you would give me a remedy for Canada thistle. I have a small patch of this I wish to destroy."

Canada thistle is a perennial plant propagated by deep underground rootstocks and is, therefore, very difficult to eradicate. The essential feature to observe in any method of eradication is to prevent the growth of leaves. If this can be done the underground parts will finally die. The young plants must be kept cut back for one or two seasons in order to starve them out. The patches should be gone over and the young plants cut off every ten days or two weeks. A small patch may be covered with tanned paper, but care must be taken to have the sheets of paper overlapping, so that the plants cannot come up between. The paper should be weighted down with boards or earth. Eight or ten weeks of hot weather will be sufficient to kill cut the plants, although the covering may remain the entire season in order to be certain that the plants are killed.

Alfalfa Again.—J. G. W. Delaware, writes: "Will you kindly tell me if it would be advisable to sow sweet clover or alfalfa in tomatoes at the last harrowing in place of scarlet clover? Would alfalfa make a stand sown in buckwheat?"

If you can distribute the seed properly, I believe alfalfa would take well in tomatoes. The extra fertilization the tomatoes receive will be splendid for the alfalfa. The only question is the acidity of the soil. If lime has been added previously and the soil is neutral the alfalfa should do well. If the soil is decidedly acid the alfalfa will make a poor growth. Alfalfa will grow with buckwheat as a nurse crop, providing the soil is sweet and well supplied with lime. It would be better to sow the alfalfa alone on specially prepared land.

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POULTRY

Edited by F. V. L. TURNER

All letters, inquiries and requests in reference to poultry, should be addressed to the Poultry Editor of The Practical Farmer, Philadelphia, Pa.

Practical Poultry Talks

Shaping the Flock for Fall Layers

At six to eight weeks of age the danger point in the young flock is passed and the poultry raiser begins to breathe more freely. However, the battle is only half won; planting the seed does not mean that a crop will be harvested.

Obviously, to keep the safely arrived pullets going at a good speed toward egg production not later than Nov. 1st is the business at hand and it is essential that every weakling shall have long since passed into the realm of uselessness or the market. To keep with a flock of healthy birds a few weaklings, susceptible to every disease that can happen along, endangering the welfare of the healthy ones, is foolhardy and unwise. "Once stunted, never wanted," is truer than the wildest hope of working against time. To rear a good flock we must have good birds; to have good birds we must sell or destroy the undesirable.

Keeping pace with the young pullets means keeping with them as much as possible, weeding out when weaklings are found, and actually seeing the growing ones grow.

When sight is rewarded by growth then the poultry man knows that his conditions are right, his rations are of the kind that make speed and that he is successful, just as the bee knows that the reward for energy is honey. The man or woman who sets 100 eggs, hatches 70 of them and raises 20 good pullets has achieved success. Mind you, much better than this has been done in many instances, but much worse has been done in ever so many more. This latter statement of fact is not meant to discourage, but to encourage to better effort. Of course, when 20 good pullets are raised there have been some cockerels raised, too, either for broilers or breeders, at a profit.

Since every little thing that makes the only thing, profit, sure is individually responsible for a part of the profit, details are of prime importance, separately, because, collectively, they are the whole profit.

A little ground bone, such as is mixed with the ration of the growing youngster to form bone and muscle, may be tainted; away goes the work and expense of weeks. Again, in these very damp spells a mold sets up in the grains, whole or ground; a setback takes place and some of the pullets die, others never fully recover and a heavy percentage of time is wiped out, and some money.

Moisture, that insidious fomenter of trouble, may set up colds, rheumatism and other ailments. Poor ventilation is bad in the best of weather—it is worse in bad weather than what Sherman said about war.

Sanitation steps in for its share of disaster; unclean droppings-boards and generally unclean drinking vessels are but the means to a fatal end.

A muddy chicken yard is not what the pullets, hens or any other kind of fowl life would choose if choice were free; watch the birds on a wet, damp, muddy, chilly day—every chance they accept to perch on something above the wetness and mire, only using the mud as the road to food compels.

Even ducks, the muddiest of mud hunting birds, thrive better on dry land.

Water to a duck is a personal necessity, cleanliness.

Of vast importance to the speed of growth of a pullet is freedom from vermin. Nature so arranged for fowl life and its parasites that red mites and lice should come in the warm seasons, about the time the pullet arrived as a downy ball of life; rare, almost as rare as hen's teeth, the parent hen will be without lice. Lice to a young chicken are as vitally vicious as the worst disease of a wasting nature. Ordinarily the red mite is not red until colored with the chick's blood, and the whole success of the chick's existence lies in the number of red mites it can support without distress to itself.

By night the red mite works; By day on the roost it lurks.

Kerosene amply sprayed on roosts, droppings-boards, on the floors of colony houses or wherever the hen, pullet or baby chick sleeps, will kill the red mite if frequently applied; crude petroleum is better still and many of the advertised preparations are designed for red mite annihilation.

Very little need be said about the rations for the growing pullets, but it is always safe to say that the ration that produces eggs will make pullets. Nearly every poultryman has some special feeding system for growing stock; many of them are successful; to those who have not been, and for those who never fed pullets for the next fall's egg yield it can safely be said that the following ration will keep them growing:

DRY MASH

Coarse bran	200 lbs.
Corn meal	100 lbs.
Gluten feed	100 lbs.
Ground oats	100 lbs.
Standard middlings	75 lbs.
Fish scrap	30 lbs.
Beef scrap	30 lbs.
Low grade flour	25 lbs.

DRY GRAINS

Cracked corn	60 lbs.
Wheat	60 lbs.
Heavy white oats	40 lbs.
Barley	20 lbs.
Kaffir corn	10 lbs.
Buckwheat	10 lbs.
Coarse beef scraps	10 lbs.

Divide these proportions by 2, 5 or 10 for smaller quantities. The ration of ground grains is always before the fowls—the whole grains are fed in the early morning, only a small quantity to whet appetites, and at night, as late as it is possible to feed them, give them all they will eat. Feed their crops after they are settled for the night; if they are plump and tight (not absolutely unyielding) they are well fed. The rest is easy; if they have soft, flabby crops they are underfed. Some green food, if no range is available, must be provided. A long range means a longer time to maturity; a medium range is ideal.

What We Are Asked

Chicks Die.—B. A. L., Delaware, writes: "We have lost over 200 young chicks this past month without any noticeable cause—some of the chicks turn dark shortly after death; that is, their flesh does. Is there any particular reason for this heavy mortality other than low vitality?"

You have stated a case that has occurred in several sections of Delaware in the month of June. There are two causes for the trouble, not the same in each flock of youngsters, but widely dif-

ferent in each case. In the one case rose bugs have been the cause of the trouble, and ptomaine poisoning in the other. Rose bugs exude a poison fatal to chicks, and thousands of promising young birds are annually killed through the liberal consumption of rose bugs.

Where young chickens die and the flesh undergoes a change of color, darkening perceptibly, the usual cause of death is blood coagulation due to ptomaine. Putrid meat or fish is the source of the ptomaine poisoning and there is no known remedy. Another source of ptomaines is found in raw bone, either the green cut bone prepared at home or purchased from meat shops; also, old butter sold for poultry purposes; if not sufficiently sterilized, is a common source of ptomaine poisoning.

Rose bug poisoning can be detected by cutting open the crop of the first chick that dies; ptomaine poisoning usually carries with it the symptoms called "hamburger." The brain of the fowl gives the first outward indication of trouble in sidewise or upward movements of the head; sometimes a downward movement is noticed.

Preventive measures only succeed in reducing mortality, the unaffected birds, young or old, being removed from the source of trouble and the rations changed instantly. Beef scrap, the kind sold for poultry use, can, if not sufficiently sweet and sterile, be a source of alarming mortality. Low vitality plays an important part in the mortality of chicks from causes shown above.

Flesh Coloring Ration.—E. E. M., Pennsylvania, writes: "Please give me a fattening ration for Leghorn cockerels for market purposes."

Yellow corn meal and sour milk mixed into a crumbly mash, fed at night, in addition to the ration below, will help color the flesh of the cockerels if they are not too old, and eight weeks of age is about the limit at which the fattening and coloring process should begin. In stating that the flesh will be colored, we only follow a popular expression—as a matter of fact, the flesh is not colored; the skin is made to take on a yellowish cast in the case of the Leghorn, which is a white skinned fowl, but the fat streaks are decidedly colored in this particular kind of chicken. The ration for fattening is equal parts of corn meal, middlings and one-quarter the amount of corn meal is made up of wheat bran and beef scrap, equal parts. Sour milk, in addition to that in the night feeding of corn meal, is given every other day. Cracked corn, sparingly fed, is the only grain supplied. Grit and charcoal are constantly accessible. Better results will be obtained if the rations are turned around each day; for instance, cracked corn, about a level tablespoonful to each bird, is given at 3 P. M. and the moist corn meal at 4:30 P. M. Next morning the corn meal (moist) is fed early and at noon the meal is a moist mash made up as described; at 3 P. M. give another feeding of moist corn meal and the cracked corn at 4:30 P. M. Next day reverse the schedule and keep up this reversal every other day for not more than three weeks, if the birds will stand the process that length of time. Green food is given every fourth day.

By weight the fattening ration is 5 lbs. corn meal, 5 lbs. middlings, 3/4 lb. beef scrap, 3/4 lb. bran. Give whatever the birds will clean up and completely fill their crops. Five birds in one small coop is the safest way to handle, and plenty of light and fresh air should be given only at feeding time. As soon as a meal is completely consumed (crops filled) darken coop with burlap or other suitable material.

Worth While Suggestions

The best place to bury a dead chicken is in a well made-fire that will consume every part of it that can spread disease. A henhouse full of flies means a henhouse that is filthy—disinfectants following a good cleaning will take care of both.

Some pullets lay in four and a half months; it is safer to have them lay in six months.

"The early bird catches the worm."

Nature never contemplated hothouses for fowls; do not try to outdo nature. Fresh air without drafts is the kind of ventilation a hen gets when she sleeps in a tree. And she lives longer therefore.

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White and Brown Leghorn broiler chicks 6c each for June, July and August. Booklet free. **Keystone Hatchery, Box 35, Richmond, Pa.**

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1000 BUSY
my 40 acre farm, 6 room dwelling. All good soil. Good water. My husband is blind, capable of selling. **MARY C. KINZINGER, R. 1, North East, Md.**

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wanted on a farm run to promote his teachings. Opportunities for health, wealth and students. No tuberculosis. Several industries stated. Pay in proportion to services. Agriculture, hygiene and mechanics taught. Owner, a successful farmer for "Incurable." In 1900, visited Terry and followed his methods to health and wealth and success in engineering. Often mentioned in "Health Hints." Now on farm again for better environment and to help others. **ERNEST ANDREWS, Granville Center, Bradford Co., Pa.**

OUR EXPERIENCE POOL

All our readers are invited to contribute their experiences on the topics under discussion. \$2.00 will be paid for the best, and \$1.00 for the next best contribution, and 50c for each other article published. Contributions must be in our hands 15 days before date of issue.

Topic No. 1199, JULY 15.—Sheep on Eastern Farms. The decline in the number of sheep raised on eastern farms during the past twenty years has been very marked, but we are told that sheep can be raised profitably in the East, both for wool and mutton. We want the experiences of eastern sheep-raising farmers as to whether or not they have found sheep profitable, with such details as to breeding, raising and marketing as can be put in a 250-word contribution.

Topic No. 1200, AUG. 1.—What forage crops have you raised for your swine, and on what summer pasturage do you note the best and most economical gains? Give particulars as to your plan of summer feeding of swine and your practical observation as to most successful methods of handling at this season of the year. Limit your manuscript to 250 words.

Topic No. 1198.—We want your experience with strawberries; have you found them a profitable crop and to what extent?

W. A. G., Sheridan, Ind.—Strawberry growing is a safe, sure and profitable undertaking, especially if the right kind of soil is possessed, and a good market is handy. I find this berry is almost a certain crop, and a great deal of money can be made from a small area of land. Being the first fruit on the market, there is always a big demand, and if good varieties are grown, neat packages used and full measure given, there is no trouble getting an extra price.

I have grown strawberries in all ways. That is, I have tried the matted row system, the single row and in hills. For strictly family use, when extra large berries are desired, I like the hill system.

For market I prefer the single row plan, and taking into consideration the size and the number of quarts that can be grown on a given area, I like this plan the best. Both the culture in hills and in single rows give nearly all large, finely colored berries; if all the runners are kept cut off there is no trouble keeping the spaces clean of weeds and grass all season; and this is absolutely necessary if strong plants and fine fruit are expected and desired.

Of the standard varieties I prefer to set a plantation of at least three kinds, viz., early, medium and late. I want them set out some time in May and kept strictly clean all season. I have the best success by manuring the ground in the autumn, and turning this under. Setting a new plantation each year is easier than to try to renew old beds.

Whatever way the plants are grown, I want a fair covering of straw put on when late autumn arrives. Early in the spring remove about three-fourths of the straw from over the hills or rows, and leave it tramped down in the middle spaces. The straw prevents freezing out of the plants, conserves the moisture during fruiting time and keeps the fruit clean when ripe, for market or home use.

W. R., Westfield, N. Y.—The most essential part of strawberry growing is having good, clean, rich land and good plants. I have one-fourth acre of strawberries of the three following varieties: Early Ozark, Splendid and Chesapeake. They fruit in the order named. The ground was first heavily manured then plowed quite deep and the plants set. They were well cultivated and hand hoed. All blossoms and runners were picked off until August 1st; they were then allowed to throw out runners one foot each side of the row.

In the fall I mulched between the rows with buckwheat straw run through a cutting box. This was put about 4 inches deep between the rows, but none on the plants, as the snow is almost always deep enough to protect them all winter. The mulch is not disturbed until after the fruit is picked. The mulch takes the place of cultivation and also makes humus later.

After picking is over two furrows are thrown together in the center of the row and then cultivated, as that works the straw into the ground and the cut straw does not bunch up as long straw does when plowing.

My yield the first year was 800 quarts at an average price of 7 cents per quart, and still plenty canned fruit for our own use.

I would also add that the ground should be worked for one or two years previous to setting out strawberries.

N. R. S., New Jersey.—Every farm should have a strawberry patch. Nothing in the early spring fits the appetite quite so well as a dish of berries. Nearly every April for 50 years I have set out a bed ranging from one-eighth to one acre.

I have tried almost every variety that I have seen advertised, and I find there is no better way than to buy your plants from some reliable grower and try them out yourself and thus see just what varieties suit your particular fancy and your soil best. Lovett, Crescent and Dunlap grow on almost any soil, while Marshall, Sharpless and Earle need special soil and care. Success is early, while Nettle is very late. Warfield and Sample are imperfect bloom and must be planted near perfect flowering varieties for best results. Gandy plants stand up high and are more easily cultivated than Glen Mary, which lies closer to the ground. Progressive and Superb are good everbearing kinds.

I use the matted row system. Manure well, cultivate often, hoe frequently, keep weeds down and on land adapted to strawberries, with a favorable season and good markets, it is a very profitable crop. We never put a berry in a box that we would not eat. Good, ripe berries, well filled boxes, make satisfied and continual customers. We have grown hundreds of seedlings, but only a very few are worthy of a name or fit for cultivation.

W. E., Olive Hill, Ky.—Our favorite strawberry is the Superb, but the Francis, in point of yield, is a close second. These two varieties are of the everbearing sort. We like the everbearing strawberry, because they produce a paying crop of fruit the first year instead of in the second, as do other kinds.

We set out the young plants in April and when they begin to bloom we keep them picked off to conserve the vitality of the plants until the more common kinds are through bearing.

By the middle of July the everbearing kinds begin to ripen, and while we pick and market the ripe fruit, they go steadily on blooming and bearing until frost cuts them down. It is a peculiarity of these all-season varieties of strawberries that they contain ripe berries, green ones and flowers simultaneously.

We do not grow the strawberry extensively, but our experience with the Superb and Francis as market berries warrants us in making the statement that they are ahead of any other strawberry on the market today, for the reason that they have the market to themselves.

We give our plants a thorough working after the bearing season is over, then they are mulched heavily with wheat straw. A heavy application of barnyard manure is put on in April and this is thoroughly worked into the ground between the plants.

Taking all things into consideration, we believe that strawberry growing, if the business is managed properly, is the best paying proposition in the entire list of market gardening.

Mrs. F. W. M., Tully, N. Y.—First I picked 40 quarts of strawberries from 100 plants set the year before. Then I set 500 Stephens' Late Champion, which yielded 12 bushels of the finest berries ever grown hereabouts, which I sold at \$3.85 per bushel, wholesale. These retailed at 15 cents per quart. This same year I yielded 10 bushels last year, and will be picked the third year this July.

They pay the best of any crop we ever tried. Last year we set 5000 plants, ten different varieties, including Wm. Belt, Haverland, Kellogg's Pride, Chesapeake, Pride of Michigan, Superb, Progressive, and productive everbearers, which we will test out this year. The Progressives now have from 200 to 300 buds and blossoms to a hill. We had a few quarts of delicious berries through September and October. We set so many we could not give them all proper care, so we do not expect as good returns in proportion as from the small bed.

I do not think we will find anything better than the Champion. They were very large and as nearly perfect as strawberries can be, it seems to me.

The Women's Exchange

This is the farm women's own department—for them and by them. It is devoted to the discussion of topics of everyday interest to the women of the farm family. The Practical Farmer invites—and expects—you not only to write your experiences on the topics under discussion but also to propose topics for future discussions. The best letter published herein each issue will be awarded a prize of one dollar, and for each other letter published we will pay fifty cents. Address: WOMEN'S DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

JULY 15.—Describe your greatest improvement this year toward making your yard and house (externally) more attractive. Your article should contain not over 250 words and should deal with original or radical improvements and changes—not just painting or planting a few flower seeds.

AUGUST 1.—To what extent have you found it profitable to sell poultry, eggs, butter, fruit, vegetables, etc., direct to families living in town or in the city? How did you secure your customers and how are you making deliveries? If you are shipping by parcel post what kind of boxes or containers are you using? Give us all the facts but do not write more than 250 words.

All contributions to the Exchange must reach us at least 15 days before the date of issue in which the topic is to be discussed.

Tell us what you do with cherries other than plain canning.

M. A. B., Flora Dale, Pa.—We consider sun preserves made of the sour red cherries (pie or French cherries) one of our choicest preserves. Seed and wash the cherries, and add sugar equal to the weight of the cherries. Let stand until the sugar is saturated with juice, then bring to the boiling point and let boil gently for five minutes; pour into shallow pans or platters, placing the vessels where they will be in the direct sunshine as much of the day as possible. Covering with glass increases the heat and hastens the process, as well as protects the preserves from dust, etc. The glass must be slightly raised to allow moisture to pass off. Stir the fruit two or three times daily. Best results are obtained by cooking 5 pounds or less in one vessel, and by making the depth in platters one inch. Two days is sufficient time when the sun is hot, but more time is needed when the weather is cool or it is partially cloudy. If begun with one quart of good sunshine no damage is done if they must wait to be finished. Always bring indoors over night. When the syrup has a good consistency, put into jars or jelly glasses without re-heating, cover with paraffine and keep as other jellies and preserves.

Mrs. S., Marlton, N. J.—Cherry and pineapple marmalade is made as follows: Wash, drain and seed the cherries and run them through the meat grinder. During this process they lose a great deal of juice, but in making marmalade this is desirable, as long continued cooking makes the flavor strong, and removing part of the juice helps to remedy this. Peel and slice the pineapple and run it through the meat grinder; mix with the ground cherries a quarter to a third as much ground pineapple. Place the mixture on the fire and add two-thirds as much sugar as fruit and juice. Cook the mixture slowly until it becomes almost thick, stirring it constantly to prevent burning. Pour the marmalade into glasses and cover it with melted paraffine. A considerably smaller proportion of pineapple may be used if desired.

Mrs. J. F. F., Zion Hill, Pa.—Cherry pudding is the best in the world. Put 1 pint of seeded sour cherries in a 3-quart pudding dish with 1 cupful of granulated sugar; stir until sugar is dissolved. Now make the following batter, and beat well and pour over the cherries: 2 1/2 cupfuls flour, 1 egg, 1 1/2 cupfuls of milk, pinch of salt, 2 teaspoonfuls baking powder. Bake in a hot oven until the top is nicely browned and a straw comes out dry and cherries cook up all around the sides. Now turn upside down on a large round platter. Cut like cake, with a hot knife. Serve with milk and sugar. I have several receipts for cherry pudding, but this drew the prize in a New York contest. I have used it for many years. It never fails.

Miss J. F. S., Uniondale, Pa.—We make cherry conserve as follows: Take 3 pounds of seeded cherries, 1 pound of raisins and one-half dozen oranges, 1 pound English walnuts and 3 pounds of sugar. Run the cherries, raisins and nuts through the food chopper separately; peel the oranges and slice very thin. Place cherries, raisins and sugar on the stove and cook until almost jelly, then

add the oranges and nuts, cook a few minutes longer, then place in jelly glasses and seal. This is a delicious relish for meat dinners.

P. S. P., Sterling, Va.—Here is our receipt for cherry cup pudding: 1 pint of sweet milk, 1/2 teaspoonful salt, 2 teaspoonfuls baking powder, flour to make a good batter. Put a tablespoonful of batter in a greased teacup, then 2 tablespoonfuls of seeded cherries and another of batter. Set cups in a large steamer and steam for 30 minutes. This will make 8 cups. Serve hot with cream and sugar.

Mrs. J. B. A., Auburn, Ind.—To make cherry butter pit cherries the same as you do to can them; then drain off the juice and run them through a food chopper, grinding the cherries fine; then take the same amount of sugar as you have cherries prepared and boil them from 20 to 30 minutes. Can while hot to keep over for winter. This is fine.

Mrs. W. T. R., Westfield, N. Y.—My husband's favorite dessert is made from the juice of the cherry. I use the medium sour cherries, making the juice one-third water. This I bring to the boiling point and add, to a pint of the liquid, 3 tablespoonfuls, heaping, of minute tapioca. This I boil until the tapioca clears, and add 1 1/2 cupfuls of sugar. I then pour it into a mold or molds and when cold serve with whipped cream. Canned cherries may be used, but they require only 1 cupful of sugar.

Mrs. D. L. T., Fine Creek Mills, Va.—Yesterday I put away my cherries for my fruit cakes next winter. I prepared them as follows: After preserving cherries, using 1 pound of sugar to each pound of fruit, there was a surplus of syrup, so I used this in preserving my cherries for cakes, using 1 pint of syrup to 2 pounds of seeded cherries. After the cherries were thoroughly cooked I drained the syrup from them and spread them on shallow graniteware pans and put them in the warmer of our range to dry, turning them over once in the three days they were kept in the warmer. When thoroughly dried I packed them in boxes well lined with waxed paper, and then wrapped the box securely in paper.

Mrs. E. G. B., Delhi, N. Y.—We spice cherries as follows: To each pound of fruit allow the same quantity of sugar, 1/2 cupful of water, 1/4 cupful of vinegar, 1 teaspoonful of cloves. Make a syrup of sugar, water, vinegar and spice; add the cherries and cook. I prefer to use a little less water, or none at all.

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LIVE STOCK & DAIRY

Edited by W. H. TOMHAVE

Why We Should Have Pure-bred Live Stock on Our Farms

Pure-bred live stock has played an important part in the development of our live stock industry. In very few places has there been much progress made along live stock lines until after the introduction of pure-bred stock and a system of continuous breeding for one particular type. European countries, and some regions in the United States, have become famous live stock centers through the breeding of pure-bred stock and persistent working toward a high standard of perfection.

Every farm in the state of Pennsylvania should have some pure-bred stock, and especially should the sires used be of such stock. Pure-bred animals have been bred by selection for a long period of time, with one object in view, and therefore much better results may be expected than in the use of grades. It is true that all pure-breds are not possessed of as much merit as can be reasonably expected; but that is in a large measure due to improper selection, feeding and management. All high producing dairy cattle have been bred from pure-bred stock on one or both sides. Beef cattle, horses, hogs and sheep have been developed in the same way. Unless pure-bred sires are used, the farmer cannot expect to make progress in the building up of his herd, as there is no foundation to build upon. All grade animals have a number of different crosses, and thus no well defined line of breeding has been fixed and nothing definite can be expected in their offspring. Few farmers realize the improvement that can be effected in a few years by the use of good, pure-bred individuals. Besides making a big improvement in the stock on the farm, the owner will always take better care of pure-bred stock because it is valued above common stock, and will thus educate himself toward an improved system of management for the whole herd.

In selecting pure-bred stock of any kind, it is important that something should be known about the ancestry of

the animals purchased. This plays an important part in the success of the venture. In the case of dairy cattle they must come from high-producing stock; in hogs attention must be given to the size of the litters from which they come.

A pure-bred herd not only adds to the financial returns from the business, but it also means a more attractive and well kept farm. The stock is kept in better condition, and this means a better sale at any time. Communities in which a considerable amount of live stock of any kind is raised become known as centers for its collection and shipment, and attract buyers from all parts of the country. Such places as Lake Mills, Wisconsin—where every year there are sold many carloads of Holstein cattle—become known all over the country through their pure-bred stock.

The increased value of land in many regions of the country is due to the introduction of good, pure-bred live stock. This, in itself, is an important consideration. It goes to show that such an introduction not only benefits the individual farmer who secures the better stock, but that the entire community is affected by the change, and its conditions improved. It also means a better set of farm buildings in which this stock is housed, and as the result a more attractive home for the farmer. It means, furthermore, an interesting problem in breeding for the farm boy and will do much to induce him to remain on the farm, by presenting a new and attractive line of work.

It is true that the creation of a pure-bred herd means a greater financial investment than in the case of scrub stock. But the fact must not be lost sight of that it does not cost more to feed good stock than poor or scrub stock, and the returns should be much greater. The young animal from a pure-bred herd will sell to much better advantage whenver it is ready to be disposed of, and thus bring greater returns on the original investment.

Improved Feed—Increased Profit

By A. M. LOOMIS

The question of how much grain can be profitably fed to ordinary dairy cows not on pasture, has been at least partially answered in a very definite and satisfactory manner by the barn feeding test recently completed by Alvin Dewhurst, a dairy farmer living near Sinclairville, Chautauqua Co., N. Y.

Mr. Dewhurst was feeding 5 pounds of grain, made up of 2 pounds mixed wheat feed, 2 pounds of corn meal and 1 pound of gluten feed, which he thought was all that he could afford to feed. He was persuaded by one of the county agriculturists to make a definite test of 4 cows by using a larger and a better balanced ration. The new ration was made up of 100 pounds wheat mixed feed, 100 pounds of corn meal, 100 pounds of gluten feed and 100 pounds of distillers' grains, and was fed at the rate of 1 pound to each 3 pounds of milk produced. Mr. Dewhurst found that on the larger, better balanced ration, although it cost him nearly twice as much money, his 4 cows paid the extra cost and gave him a 60 per cent. profit besides. He is now feeding his entire herd the increased ration.

The cows were tested a week or more

before the real test began, the 4 in Group 1 averaging 83.8 pounds of milk per day for the 4, and the 4 in Group 2 averaging 83.3 pounds per day for the 4, so they were practically equal before the test started.

During the test of 31 days the average of Group 1 went down to 78.2 pounds per day, while Group 2 went up to 96.9 pounds per day. Group 1 made 2426 pounds of milk during the test; Group 2 made 3004 pounds. The grain feed of Group 1 cost \$9.48; the grain feed of Group 2 cost \$15.47.

SUMMARY.

Group 1.	
Value of milk	\$40.48
Cost of grain	9.48
Balance	\$31.00
Group 2.	
Value of milk	\$50.08
Cost of grain	15.47
Balance	\$34.61

Difference in favor of Group 2, \$3.61. After the test was ended the county agriculturist and Mr. Dewhurst called the neighbors together to listen to the result. There was no getting away from the facts, and they were emphasized by two points made by Mr. Dewhurst.

"I thought I knew my cows, and how much grain they would pay for, but I find I was mistaken in both," he said. "I will never go without milk scales hereafter, and then I will know what my cows are doing. I knew I was feeding more grain than most of my neighbors, and thought I was feeding all that I could stand. I find that I was feeding only a little over half enough. I have put my whole herd on the new ration and am feeding at the rate of 1 pound to each 3 pounds of milk made."

As stated at the outset, this partially answers the question. It lacks in finality because Mr. Dewhurst's cows, it will be readily noted, are just average cows. There are probably better cows, and they probably require individual study. Then, too, Mr. Dewhurst fed as roughage mixed hay. His ensilage had been used up before the test. Just what the cows would have done on ensilage is an interesting question. It certainly would not have made the showing in favor of better feeding any smaller.

Fresh Water for Farm Animals

The best returns from feed fed to farm animals are obtained when the animals are allowed plenty of drinking water. Water is essential in the proper digestion and assimilation of the food. Since a large part of the animal body is made up of water and a great deal is constantly given off in one form or another, it is essential that animals have all they will drink. An animal that does not receive all the water demanded by the system will not be the most economical individual to feed. The amount required by the different animals will vary with the season of the year. During the hot summer months it is well to have a supply of good water before all animals that are on pasture. It is surprising the amount that a drove of hogs will consume on a hot day. Unless hogs have access to fresh water from a stream it is a good plan to have their troughs filled at least twice a day during hot weather. The feed trough may be used as a container. In the morning when they have cleaned up their feed the troughs should be filled with clean water, which will usually last until noon. At noon all troughs should again be filled so that the hogs are never in want. Such a plan of watering swine will not only mean greater thrift among the hogs, but it also means guarding against loss from over-

heating, due to lack of sufficient water. The hot days of haying and harvesting are always trying to both man and beast. The men are usually supplied with plenty of good drinking water, but it is seldom that the farmer thinks of taking a barrel of water out in the field so that the horses may have a drink during the middle of the forenoon or afternoon. It is very little work to do this and it adds greatly to the comfort of the horses. It will not only satisfy the thirst of the horses during the day, but it also does away with the danger of their drinking too much water at noon or in the evening. If you have not allowed the horses a drink during the forenoon or afternoon while in the harvest field, give it a trial and decide for yourself whether the extra time is not well spent. Water is cheap and usually easily obtained and yet there are many cases where the best results are not secured from work animals or the best gains made in the feed lot due to the lack of it. It is a good plan for every live stock man to remember that the animals' systems require a large amount of water and that more is required during the summer than during the winter, owing to the heat.

Shade in the Swine Lot

With the growing interest in forage crops for swine it is essential that the matter of shade for the various lots be not overlooked. Hogs are more easily overcome by heat than any of our farm animals and serious losses are often sustained through carelessness in management. No hog lot, whether used as pasture or as a dry lot for fattening, should be without adequate shade. The type of shade to provide will depend upon the material at hand. One of the simplest and most satisfactory types is a natural grove. If the hog lots are near a wood lot and can be extended into the woods it is always desirable to do so. In many cases there are trees along the fence row that can be put in the enclosure and ample shade provided thereby. It is very seldom desirable to provide permanent buildings for shade during the summer, as the various lots can not be so easily reached unless separate lanes connect all with the permanent house. Colony houses can be used to advantage as they can be moved from one lot to another as the hogs are changed on pasture. If these are used they should be provided with extra doors so as to get ample ventilation. Another cheap and simple style of shelter is provided by the temporary use of burlap. Old bran sacks can be nailed to strips of board fastened to posts or uprights. Such shade is very inexpensive, can be taken from one lot to another and provides all that is necessary. These suggestions are not new thoughts in swine management, but are given for the benefit of beginners in the hog business and as reminders to those who have had considerable experience in growing swine.

Some Barnyard Don'ts

W. M. W. BATHLOT.

Don't hang the harness where the calves can chew the straps; harness costs money.
Don't let the manure accumulate in the stable, but take five or ten minutes of your valuable time and clean it out every morning; it means less backache later on.
Don't neglect your door and window fastenings. Nothing is more irritating than the sight of a door swinging idly in the wind. If you have no latch, make a button. Such neglect will cause people to call you shiftless.
Don't leave a gap under the mangers,



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or beneath the partitions between stalls large enough for a horse to shove a leg through; a broken-legged horse is expensive property.

Don't leave a piece of board with a nail protruding through it in or around the barn; carelessness in this respect sometimes causes lockjaw.

Don't let a piece of barb wire lie loose in the neighborhood of stock. It might lie there for years without causing damage, and again, it might not. Remember, there are more accidents caused by barb wire than from any other cause.

Don't forget that stock needs a little salt. Keep a block in the barnyard or some loose salt in a box where they can take a lick whenever they feel like it; forgetting to salt your stock and then to make amends by mixing a gorge of it in the feed is mighty poor policy.

Don't forget that dry hay or fodder fed from the barn loft is relished more by your stock than wet feed thrown to them. An animal is mighty hungry when he eats wet fodder.

Don't forget that your horses and cows have precisely the same feelings as yourself, and before forcing hardships upon them try the medicine first upon yourself; then you will know just how much of a dose to prescribe for your dumb brutes.

Eliminating the Obstacles in Dairying

(Concluded from page 262)

7000 acres, divided into nearly 100 small farms of 60 to 100 acres, each under the direction of a competent farm manager. Twenty-three of these farms were dairy farms, averaging about 50 cows to the farm. Milking machines were in use on each farm, and when Supt. Millard was asked as to their success he replied: "We would be forced to throw up our hands and quit were it not for the milking machines. They have solved our labor problem for us and insure the success of our dairy operations on such a large scale."

The machines had been installed for the purpose of doing away with the extra labor required for hand milking and to insure the cleanest milk possible for use in the manufacture of milk chocolate in the Hershey factories. The actual records in the farm offices showed that larger production from the same cows had been made possible since the installation of machines. On many of the farms the dairy farmer was aided by the boys and girls of his own family in the milking of the cows, all taking pleasure in the work—in decided contrast to the boy or girl on the average farm who is required to milk cows night and morning without such efficient mechanical aid. The dairymen were free in their statements as to the troubles that they had experienced, but in no instance was fault found with the mechanical construction or work of the machine, but rather of the care of the outfits by the operators themselves, just as carelessness will affect the operation of any farm machinery.

One man can easily milk 20 cows in an hour with two units, though the stripping and care of the milk makes it practical that a man and a boy or two men do the work with the machine night and morning. This takes care of the obstacles confronted in getting good hand milkers and the high wages necessary for help. A poor hand milker can seriously curtail the yield of milk of your cows and the disposition of the average hired man is not conducive to tranquility and peace of mind of the cow he is milking. The machine is uniform in its work, the same today and tomorrow, and we have yet to hear of the invention of a mechanical milker that curses a cow or strikes her with the milking stool

under slight provocation. The machine takes the place of high-priced help and it never quits when it is needed the worst, neither does it ask for time off on Sundays and holidays.

When the machine is used in the milking operation it enables the farmer to dispense entirely with the help of one or more hired men, and to keep the necessary help profitably employed at other work of the farm. The saving of hours night and morning that may be put in at work with the crops or in other departments of the farm make it possible for the machine to pay for itself in the course of a year or two and prove it a mighty profitable investment.

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or beneath the partitions between stalls large enough for a horse to shove a leg through; a broken-legged horse is expensive property.

Don't leave a piece of board with a nail protruding through it in or around the barn; carelessness in this respect sometimes causes lockjaw.

Don't let a piece of barbed wire lie loose in the neighborhood of stock. It might lie there for years without causing damage, and again, it might not. Remember, there are more accidents caused by barbed wire than from any other cause.

Don't forget that stock needs a little salt. Keep a block in the barnyard or some loose salt in a box where they can take a lick whenever they feel like it; forgetting to salt your stock and then to make amends by mixing a gorging of it in the feed is mighty poor policy.

Don't forget that dry hay or fodder fed from the barn loft is relished more by your stock than wet feed thrown to them. An animal is mighty hungry when he eats wet fodder.

Don't forget that your horses and cows have precisely the same feelings as yourself, and before forcing hardships upon them try the medicine first upon yourself; then you will know just how much of a dose to prescribe for your dumb brutes.

Eliminating the Obstacles in Dairying

(Concluded from page 262)

7000 acres, divided into nearly 100 small farms of 60 to 100 acres, each under the direction of a competent farm manager. Twenty-three of these farms were dairy farms, averaging about 50 cows to the farm. Milking machines were in use on each farm, and when Supt. Millard was asked as to their success he replied: "We would be forced to throw up our hands and quit were it not for the milking machines. They have solved our labor problem for us and insure the success of our dairy operations on such a large scale."

The machines had been installed for the purpose of doing away with the extra labor required for hand milking and to insure the cleanest milk possible for use in the manufacture of milk chocolate in the Hershey factories. The actual records in the farm offices showed that larger production from the same cows had been made possible since the installation of machines. On many of the farms the dairy farmer was aided by the boys and girls of his own family in the milking of the cows, all taking pleasure in the work—in decided contrast to the boy or girl on the average farm who is required to milk cows night and morning without such efficient mechanical aid. The dairymen were free in their statements as to the troubles that they had experienced; but in no instance was fault found with the mechanical construction or work of the machine, but rather of the care of the outfits by the operators themselves, just as carelessness will affect the operation of any farm machinery.

One man can easily milk 20 cows in an hour with two units, though the stripping and care of the milk makes it practical that a man and a boy or two men do the work with the machine night and morning. This takes care of the obstacles confronted in getting good hand milkers and the high wages necessary for help. A poor hand milker can seriously curtail the yield of milk of your cows and the disposition of the average hired man is not conducive to tranquility and peace of mind of the cow he is milking. The machine is uniform in its work, the same today and tomorrow, and we have yet to hear of the invention of a mechanical milker that curses a cow or strikes her with the milking stool.

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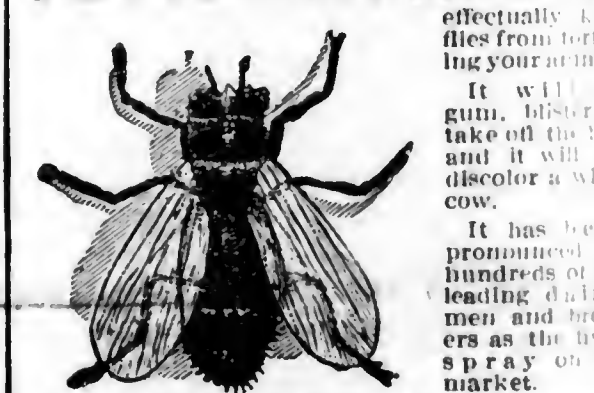
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In This Issue: The "How and Why" of the Gas Engine

The Practical Farmer

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Farm Tours for Farm Workers

By MRS. H. M. WOODWARD

Under the guidance of our county agricultural adviser, farmers have been given an opportunity to see and study a variety of subjects of interest by means of a series of farm tours. Through his work the adviser comes in touch with many conditions seldom known of by farmers in general. These conditions must be an object lesson, whether they have been handled properly or not, as success or failure must have resulted and the relation of cause and effect can be easily seen.

Several tours have been made and it is hoped to make one through each township every year. Trips are made by automobile, as the ground could not be covered in any other way, and a carefully timed program is published previously, so that those who can not take the entire tour may meet the party at any desired place. Extra cars are provided so all may go, each person carrying his own lunch, hot coffee being provided at the farm being inspected at the dinner hour. During lunch good speakers are heard on subjects of interest, often on something which has been observed during the trip. Several times, more than 25 cars have made the tour, with from 100 to 150 people.

On one of the tours a field which was originally a swamp was visited, demonstrating the benefit of tiling. This soil, though rich, had raised unsatisfactory crops of both oats and corn, and the owner wanted advice as to how to handle it. The adviser tested the soil for alkali, found it in too great quantity for successful crop raising, and advised cultivating the soil often to get more air into it, afterward giving a heavy dressing of manure. The land, though rich, was poorly balanced, and the fermentation of manure and contact with the air are calculated to bring it into the desired condition.

An exceptionally fine herd of pure-bred Holsteins was visited. Their owner has an up-to-date barn with swinging stanchions, a silo, and raises plenty of alfalfa for his stock.

A farm which has been exhausted by overcropping and underfeeding until little can be produced on it, was of great interest. It was suggested that a thorough liming of the soil, sowing sweet clover to be plowed under while green, and judicious fertilizing would in time bring it back to its original fertility.

Another farm that had been cropped to death had an excellent stand of alfalfa on a field which had previously failed to produce a crop worth harvesting, the result being obtained by a liberal application of lime.

Another farm was visited on account of its buildings, particular attention being paid to having barns, hen houses and stables as comfortable and convenient as the house, which is a model country home.

A clover field in which there was an unusually good stand of clover, had spots in which only weeds grew. Examination showed the soil in those spots strongly acid, and a heavy dressing of lime was advised.

A field of corn which had been cultivated only three times with a surface cultivator, was shown to prove the value of shallow cultivation. It certainly was a success in that case, as the corn was rank and the ears heavy.

On another tour the first object of interest was a fine alfalfa field. The seed had been inoculated by the glue method, and the soil treated with lime before planting, the result showing the benefit of doing the right thing at the right time.

There was a demonstration of limestone crushing at a nearby quarry, which proved of great interest. The pulverizer turned out 2½ to 3 tons per hour, labor being furnished by nearby farmers, the product being given them in exchange.

A herd of Short-Horn cattle, some fine Clydesdale horses and a solid cement silo held the attention of the farmers at the next place. The silo is one of the largest in the county, 61 feet high, with a capacity of 250 tons.

Another point of interest was a stand of red clover on land which had previously been too acid to grow clover, and had been put in condition by the use of lime. An old blue grass sod was seen which had been sown to red and alsike clover a year before, by drilling it into the sod very early in spring. An excellent stand was obtained, which gave those interested an idea of how an old blue grass pasture may be economically handled.

A round dairy barn, with silo in the center, was interesting, the stanchions in a circular row facing the silo furnishing accommodations for 41 cows. It is equipped with manure and silage carriers, which the owner states save at least one-fourth of the labor.

A field of alfalfa seeded 27 years ago was seen, and though the original acreage has shrunk to one acre, the alfalfa was first-class in every respect. Though early in June, some of the tops were more than 40 inches long. The explanation is that the subsoil is made up of rotten limestone, so the conditions natural to alfalfa were there when the roots became long enough to reach it.

A flock of 280 sheep being raised on a stony farm proved that such a farm is better suited to sheep farming than any other kind.

During another tour stops were made to inspect the outcropping of rotten limestone on two farms. This is in condition for immediate use, and so is a valuable product. A visit was made to a farm where fancy Berkshire hogs are a specialty, and from which they are shipped all over the country. To another where a 36-acre field of rape was growing, in which 100 lambs were being pastured, the rape having been sown among corn at the last cultivation.

Percheron mares and colts were shown at one place, also up-to-date hog houses. At another farm a test was made of worn-out land, samples being taken to a depth of 6 feet, strong acidity being shown all the way. The adviser pointed out how lime, a crop of clover and later applying rock phosphate would bring it into good condition.

A 10-acre hay field which had produced fifty tons was seen, and a discussion followed on the method used. Another point of interest was a farm where the house is entirely modern and electric lighted. Pure-bred Short-Horn cattle and Berkshire hogs are the specialty of the owner, and their handling showed the same close attention to detail as was seen in the arrangement of the house.

Visits were made to two farms where the Farm Improvement Association of the county had trial plots of corn growing, 43 varieties being planted in each, from seed grown in this county, to show the results gained on two distinct types of soil. On one farm a newly seeded field of alfalfa was inspected, it having been sown much later than considered safe in this section. The dry season prevented the work, though the land had been made ready at the proper time. The soil was well inoculated from a former crop, and a remarkably strong

stand resulted. Another alfalfa field had yielded its first heavy crop in this, its fourth, year. The owner did not become discouraged, but persevered until it made satisfactory returns.

A field was shown where corn had followed alfalfa, the shocks being heavy and close together, showing the effect of the nitrogen stored up by the former crop. The adviser told of experiments made in growing crops after alfalfa, the result being a bumper yield of corn for at least two years, whereas after clover the first yield is large and the second one often much smaller.

One unusual arrangement was seen—a conduit under the road so hogs could go from barn to pasture at any time, thus obviating one of the difficulties in a farm lying on both sides of the road.

One of the best object lessons seen in these tours was a provision made by an extensive corn grower for drying and curing seed corn, not only for home use but also for sale. An inexpensive building where heat and ventilation can be provided when needed has made a great saving of seed corn, which, under such conditions, shows a high per cent. of germinating power.

Two more tours are to be held in the fall, both to points of interest outside our county. One is to inspect a place of

less than 80 acres, from which the owner has an income greater than that from many large farms. It is in fruit, and by careful handling has put its owner in condition to snap his fingers at hard times. The other is to study the handling of a farm devoted to the beef feeding industry. Alfalfa and silage are the principal crops, and 90 head are fed from the 140 acres under cultivation. On account of so much stock being kept the land is very rich and has reached a high state of fertility.

These tours have been interesting and profitable. Many women have been in the party, and some of them are wondering if it might not be well to have a tour of their own, to inspect up-to-date houses and kitchen conveniences.

(We are sure that many of our readers will appreciate the good points of such "farm tours" as Mrs. Woodward has told us about. We know of a number of counties that have entered into this work with enthusiasm and profit; but we know of other counties where no work of this sort is undertaken. Nothing can do us more good in our business of farming than to see how others are doing the work we have to do and what they are accomplishing. If these farm tours have not been undertaken in your county, why not "start something?" If such work is already being done in your county, why not enter into it?—The Editor.)

The Editor's Book Review

Below are comments on some of the more recent books which have come to the editor's desk from their publishers. The modern farmer is a reading farmer of course, and like other business men we believe our farmers are building up libraries by the occasional purchase of books on farm subjects in which they are interested; in no other way can a farmer improve so rapidly or substantially in his chosen calling as by reading the best in farm papers and books and preserving for reference the written accounts of the experiences of others.

For our readers' convenience, we will be pleased to furnish at the publishers' prices any of the books reviewed below, or any other obtainable books on farming. Further, we will be glad to give suggestions regarding books on any given farm subject on receipt of request with stamp for reply.—The Editor.

AGRICULTURAL COMMERCE, by Grover G. Huebner. (D. Appleton & Co., New York, \$2.00 net.)

After the growing and harvesting of crops, the subject of next greatest importance to the successful farmer is marketing—the distribution of that which he has already produced; and this is one of the most vexed problems before the American farmer today. To quote the preface of the book before us, "The purpose of this volume is to describe the commerce of the United States in agricultural products, special attention being given to those phases of trade organization which have to do with the distribution of farm commodities from producer to consumer." Before we farmers are in position to intelligently discuss radical improvements in marketing conditions, we need a full knowledge of exactly how distribution is affected today, and this volume goes a long way toward supplying that information.

A SHORT HISTORY OF ENGLISH RURAL LIFE, by Montague Fordham, M. A. (Charles Scribner's Sons, New York.)

A valuable history of rural life in England from the Anglo-Saxon invasion up to the present time. A narrative of intense interest and value to the American who seeks a solution to our agricultural problems, industrial, social and political; a guide whereby we may avoid the blunders of our English brothers and profit by their successes. A good book for the thoughtful farmer's library.

FARM MANAGEMENT, by G. F. Warren, Professor of Farm Management, New York State College of Agriculture at Cornell University. (The Macmillan Co., New York, \$1.75 net.)

We wonder how many of our readers' libraries contain this most excellent work on "Farm Management," certainly a good many must have it, for, published in April, 1913, this volume has since gone through five re-printings; but many of our farmers are still unsupplied with it and to such we want to recommend it. As a study of the business principles in farming it is used as a textbook in many of our agricultural colleges and schools, but its usefulness does not cease with the end of student days, as it is of constant use for reference and study throughout the farmer's whole life. Five hundred and ninety pages of

good common sense information concerning the business of farming and the successful management of farming enterprises.

SHEEP FARMING, by John A. Craig. (The Macmillan Co., New York, \$1.50 net.)

With the reawakening of interest in the subject of sheep raising on eastern farms, many of our readers will be seeking information such as is contained in this standard work. The value of sheep to the eastern farmer must lie in the combining of the profits on wool and mutton, and it is with this in view that Prof. Craig's book is written. In its pages the author treats of breeds and breeding, the formation, management and improvement of the flock, feeds and feeding, and finally of the diseases to which sheep are subject. The text carries with it a number of excellent illustrations.

FERTILIZERS, by the late Edward B. Voorhees, Director of the New Jersey Agricultural Experiment Station; revised edition, edited by John H. Voorhees. (The Macmillan Co., New York, \$1.50 net.)

The late Prof. Voorhees' first work on this subject was published more than seven years ago and is the basis of this volume, which has been thoroughly revised and enlarged by the author's son. Its purpose is to provide the farmer and agricultural student with the information necessary for the most efficient use of fertilizers, and it contains chapters on the sources, character and composition of natural, home-made and manufactured fertilizers, with suggestions as to their use for different crops and under different conditions. The work is a comprehensive and authoritative one and should find a place in many of our farmers' libraries. Three hundred and sixty-five pages of text, including a complete index and numerous excellent illustrations.

TEXT-BOOK OF LAND DRAINAGE, by Joseph A. Jeffery. (The Macmillan Co., New York, \$1.25 net.)

A large portion of our farmers are troubled with drainage problems—even though many do not realize that some of their failures to obtain satisfactory crops are wholly or in part due to improper drainage. The volume before us, just off the press, seems to be a much needed one and should help many of our readers to a solution of their problems. The author, who is at present Land Commissioner for the Duluth South Shore and Atlantic Railway, and was formerly Professor of Soils in the Michigan Agricultural College, is well qualified for the work he has undertaken, and his book is most intensely interesting and highly practical. To such of our readers as have areas on their farms where, through faulty drainage, they are only able to get half stands and low yields, we recommend a careful study of this volume. It contains 256 pages of text, fully illustrated.

A TWICE-A-MONTH JOURNAL of practical, every-day experience for, and by, men and women who take their living from the soil.

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The "How and Why" of the Gas Engine

By ALFRED E. WALLER

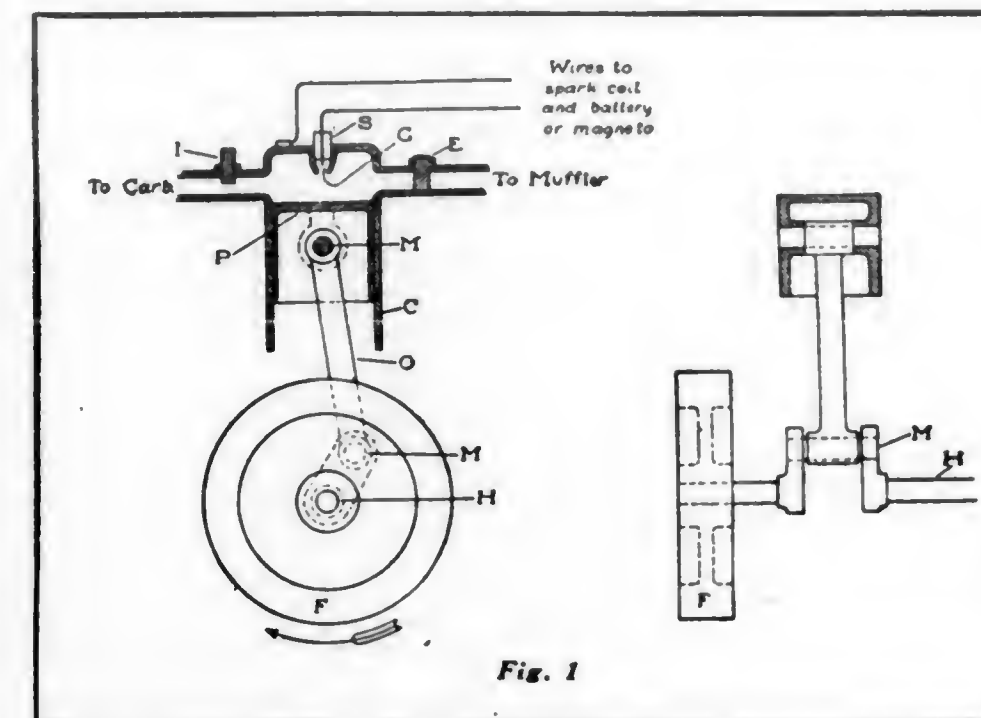
IT may be said by way of introduction that this article is not intended to be a set of rules for the care of gas engines. There are many excellent makes of engines in daily use, nearly all differing in design to a greater or less degree, and a practical treatise which would be of real value in the operation of each kind would occupy a great deal of space, even if it were possible to compile the necessary information. It is the writer's purpose, therefore, to explain the principle of operation of the internal combustion engine, or gas engine, as it is generally called, and to leave the details of care and maintenance to be discussed at length in the instructions always furnished to the purchaser of the gas engine.

The gas engine is a machine which makes it possible to use the power obtained from explosions of gaseous vapor. The gas may be natural, such as can be obtained from natural gas wells in some parts of the country, it may be illuminating gas, or it may be obtained by evaporating some fluid, such as gasoline. Several things must be done before we can get a power-producing explosion. First, the gas must be mixed with a certain amount of air. Then the mixture must be compressed, and finally it must be ignited while it is compressed. The electric spark is used almost universally for igniting the compressed mixture in a gas engine cylinder. Just how the explosions are produced and utilized may be seen by referring to the elementary diagram of a gas engine shown in Fig. 1. This drawing shows a greatly simplified cross section of the engine. It is practically a diagram of the principal parts shown in Fig. 2. The fly wheel, F, in Fig. 1 is connected to the piston, P, so as to operate in exactly the same way as the gear wheel and pump shaft of a windmill or the pitman of a mowing machine. As the fly wheel turns around the crank moves the piston up and down in the cylinder, and, when the engine is running, the up and down motion given to the piston by the gas explosions serves to spin the fly wheel. In Fig. 1 at the top of the drawing the right hand pipe leads to the muffler, a device for reducing the noise of the gas explosions, and the left hand pipe leads to the carburetor. This device will be explained in detail later.

We must suppose that the engine tanks have been filled with gasoline and oil, that the battery and coil have been connected and everything is ready to start. The fly wheel of the engine is turned to the right, by hand, and, if at the time it is turned, the piston is in the position shown in Fig. 1, the following actions take place in the order in which they are described: Rotation of the fly wheel causes the piston, P, to move downward and, at the same time, the intake valve, I, is opened by a valve-rod not shown in the drawing. The downward motion of the piston creates a vacuum in the cylinder, C, and draws a mixture of air and gasoline fumes in through the intake valve, I.

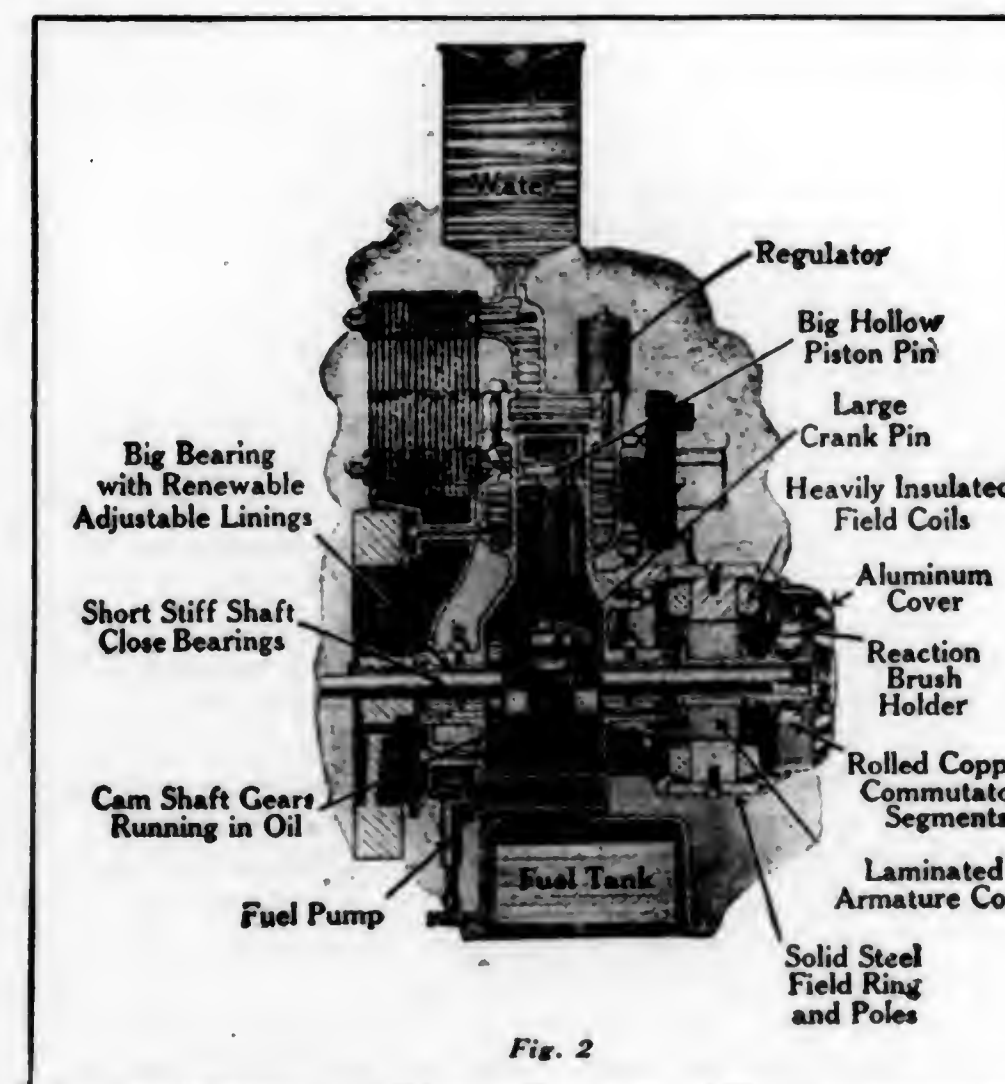
When the piston, P, reaches the bottom of its travel, the continued revolution of the fly wheel starts it in an upward direction. At this moment the intake valve, I, closes so that the piston, in its upward motion, compresses the charge of gas drawn into the vacuum created by its downward trip. When the piston reaches the top of its travel and the mixture in the cylinder is fully compressed, an electric spark at G ignites it. Igniting the compressed gas causes an explosion and the piston, P, is sent downward with considerable force. The heavy fly wheel is thus made to revolve

at a high speed and, when the piston has reached the lowest point of its travel, carries it on again in an upward direction. At this moment the exhaust valve, E, opens, allowing the piston in its upward motion to force out the burned gases remaining in



the cylinder. When the piston is at the top, all the burned gases having been forced out, the exhaust valve, E, closes and at the same time valve, I, opens, so that the piston on its third downward trip takes in a new charge of gas and the cycle of operations described above is repeated.

The gas engine consists of a great many parts.



These should be, and in the great majority of cases are, properly put together when the engine is delivered to a purchaser. But the engine is not "all there" unless it has three essentials—gas, usually called "mixture," compression and spark. Without all three of these it cannot operate satisfactorily. If it has these essentials and is properly put together, it cannot fail to work. We mention this because people

often think that a gas engine needs an engineer to take care of it, and this is not the case. Be sure that the engine has mixture, compression and spark and the engine will be sure to run. It is like a darkey's account of how his balking mule was jolted out of a stubborn fit by the engineer of a passing traction engine. The engineer put a rope around the mule's neck and tied it to the engine, and, as Sam said, "When dat injine done started, dat mule was obleeged to went."

In the preceding description we just mentioned the carburetor and our next care should be to investigate it more thoroughly. It consists of a metal reservoir, usually brass, a small valve and a float. The float is arranged so that it closes the valve when the gasoline, fed into the carburetor by the gas tank, reaches a certain level. Each downward trip of the piston sucks air into the engine cylinder through a port or opening in the cylinder and evaporates some of the gasoline to make the mixture. When the evaporation has lowered the level of the gasoline in the carburetor to a certain point, the float valve allows more gasoline to flow in until it is again at the proper level. There are many carburetors on the market, each differing from the other to a greater or less degree, but they all operate on this principle.

As in the case of the engine itself, the best results can be obtained by reading carefully and following closely the directions which accompany the machine. There are various simple methods of testing for mixture, compression and spark, and the engine manufacturers are always careful to explain the best way to test the machine they build.

The gas engine has many uses on the farm. In previous articles we have discussed its use as a means of generating electricity for light and for many other purposes. Gas engines are also used for threshing, sawing wood, cutting ensilage, shelling corn, hoisting hay and grinding bone or feed and, in fact, for operating practically every kind of farm machinery.

This wide range of usefulness becomes constantly more extended, for several manufacturers supply gas engines mounted on trucks, making them readily portable. As a result threshing may be done out in the fields, the sawmill may be located in the woods, and the same engine used for both. This makes light weight a desirable feature, always provided the lightness is not obtained by sacrificing strength or ruggedness. Even comparatively heavy engines may be moved around with surprising ease if they are mounted on an ox cart or heavy truck of some kind, and it is best to block the truck very securely to prevent vibration when the engine is in use. One truck which the writer has seen and which operates very satisfactorily, has the side beams or stringers, extended about one foot beyond the wheels at each end. When the engine is brought to the desired point, one end of the truck is jacked up at a time, and two special heavy benches like saw horses, are put under the ends. This leaves the wheels entirely clear of the ground and makes the engine platform very steady.

The use of gas engines in the applications just mentioned is steadily gaining popularity with farmers. At first they were a little slow to accept the engine and appreciate its value. Perhaps this caution was somewhat justified by the fact that early types of gas engines were, in some instances, not so well adapted to farm uses as they might have been.

(Continued on page 288)

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JULY 15, 1916

A Big Truth Convention

DURING the last week in June there was held in this city a wonderful convention of business men from all over this country, with representatives from foreign nations, which had as its motto, "Truth in Advertising." This was the Twelfth Annual Convention of the Associated Advertising Clubs of the World.

Advertising is a mighty force in the every-day life of all of us—whether we live in the city, country town or on the farm. Without advertising this would be a sorry world and a hard one to live in; for without advertising it would be hard for the householder to locate the places where he could buy many of the necessities and luxuries of his daily life, for the farmer to learn where are for sale the tools, seeds and stock he needs in his business, and for the manufacturer to locate the sources of raw materials, etc.; on the other hand, the farmer, the manufacturer and the merchant would find it difficult to market their goods outside of the narrow territory in which they could be offered by word of mouth and placed directly in the hands of the consumer. Advertising is the go-between in all lines of trade; it brings to our doors the products of the whole world and in return it carries our products to other consumers throughout the world who need and eagerly await them; it makes the world brighter and us happier by reducing the cost of living in giving us necessities at the world's market price and by enabling us to enjoy many of the comforts and luxuries which otherwise we would have to do without. Altogether advertising is one of the most necessary things in this workaday world of ours.

But a large portion of the value of advertising in general rests in the truthfulness of each individual piece of advertising that goes before the public. Just so long as through advertising we are able to satisfy our needs and get full value for our money, advertising serves its purpose as a faithful go-between twixt producer and consumer; but when through falsification or exaggeration of one or more individual advertisers we come to lose our faith in the integrity of advertisers in general, the whole value of advertising as a commodity of life suffers.

Through lack of concerted effort to keep advertising clean, reliable and trustworthy, it had reached a low ebb when the advertising club movement resulted twelve years ago in the formation of this Association of Advertising Clubs of the World; since then the improvement has been steady, if sometimes slow, through the efforts of the Association, as directed by its officers and committees throughout the year and in its annual conventions. Many manufacturers and merchants who had fallen into the error of exaggeration and doubtful statement, through a lack of realization of the fact that the value of advertising to producer and consumer alike rests entirely in its

strict adherence to the truth, have come to see their mistake and have joined enthusiastically in this upward move toward "truth in advertising." Those who will not mend their ways, but persist in a course of fraudulent advertising, are being brought to account through the efforts of the officers and "Vigilance Committee" of the Association co-operating with the Federal Trade Commission of the United States Government.

That the good work this Association is doing is receiving proper recognition is evidenced by the fact that the President of the United States made a special trip from Washington to address the convention; that the Secretary of the Interior addressed another session of the convention—as did also the Governor of Pennsylvania and the Mayor of Philadelphia; that the University of Pennsylvania gave the free use of its buildings and grounds for the sessions of the convention, and the Provost of the University presided at one meeting and was in attendance at many others; that men of prominence in Philadelphia gave of their means for the entertainment of the members of the Association and of their time for attendance at the sessions; and that manufacturers, merchants and publishers of prominence throughout the country are subscribing liberally to a fund to finance the all-the-year-round work of the Association.

God speed this good work, and may the time soon come when advertising will come into its own and receive the full recognition of its value as the faithful, reliable servant of mankind and be absolutely prohibited as the tool of the unscrupulous.

Uncle Sam and the Country Roads

THE Bankhead-Shackelford bill providing for national appropriations to aid in the improvement and construction of highways in the several states, as amended and finally passed, has some good features in it which will commend this new departure in national legislation and its entrance into a new sphere of usefulness.

It authorizes the Secretary of Agriculture to co-operate with the states through their respective state highway departments, or other agencies having control of the highways, in the improvement or construction of rural post roads. In the bill a rural post road means any public road in the United States over which the United States mails are transported. This rather liberal interpretation, however, is hedged about by restrictions which will prevent the money from being used in urban districts which might otherwise come under the above definition.

The roads built or improved under its provisions must be "substantially" built and "properly maintained" by the highway authorities of the states. If any such roads are not properly maintained, the Secretary of Agriculture is directed to withhold any further appropriations to that particular state until the "maintenance" work is properly done.

Before any state can take advantage of the appropriations, its legislature must accept the provisions of the act, or in a certain contingency the assent of the Governor will be sufficient.

The following appropriations are made: For the fiscal year ending June 30, 1917, \$5,000,000; for the year ending June 30, 1918, \$10,000,000; for year ending June 30, 1919, \$15,000,000; for the year ending June 30, 1920, \$20,000,000; and for the year ending June 30, 1921, \$25,000,000. It is to be apportioned among the states as follows: One-third in the ratio which the area of the state bears to the total area of all the states; one-third in the ratio which the population of each state bears to the population of all the states; and one-third in the ratio which the mileage of rural and star routes in each state bears to the total mileage of rural and star routes in all the states. The amount to be expended by the nation on such work is not to exceed 50 per cent. of the total cost, and not to exceed \$10,000 per mile, excluding bridges of more than 20-foot span in the clear.

Before any money can be expended as above, the highway authorities must submit to the Secretary of Agriculture project statements giving full specifications, plans, surveys, etc., of the proposed construction. These must be approved by the Secretary of Agriculture, and the work performed be subject to the inspection and approval of his representatives.

The bill in its amended form as finally passed thus provides for national help in road making in a practical manner, and the money can be used where it is most needed to make the highway system of the country most helpful to the needs of the farming section. The power given to the Secretary of Agriculture is

ample if rightly used, to prevent any expenditures on unnecessary projects, and to confine them to the one purpose of improving the common dirt roads which radiate out from postoffices. The improving of these rural routes comes nearer to putting the farms into quick and economical communication with distributing and market points than any other plan now possible under our present system of roads.

The amounts appropriated by the bill, while large on paper, are but a drop in the bucket toward any very appreciable improvement in the country highways. But it is a start in the right direction, and if it will focus the public interest on the vital point in road work—the improvement of the common dirt roads—it will be worth all the money which this new departure will call for.

Its success will largely depend on the intelligent co-operation of state and local road officers.

At this writing the bill is in the hands of the President for his action.

The Dairy Cow on the Small Farm

ON another page of this paper is a story by a West Virginia farmer's wife telling how she made a few dairy cattle pay on a little farm of fifty acres under handicaps that would have discouraged many, perhaps most, of us; it is the old story of pluck, perseverance and "managing," but it is mighty well told and there are many good points in it. For the purpose of this editorial we want to call attention to just the one point that Mrs. Martin makes, that on small farms as well as big dairy farms "blood sure does tell" in dairy cows. Given a few motherly scrub cows and a pure-bred sire of quality, and the grading up will double and triple the profit in succeeding generations.

Occupants of small farms who are interested in going into dairying in a small way, or in increasing the profits of the small herd they already have, will be interested in a Bulletin (No. 165) just issued by the Iowa State College of Agriculture (Ames, Iowa) on "The Influence of Environment and Breeding in Increasing Dairy Production." In this pamphlet is told the story of eight years of investigation and experiment in the building up of a good, paying dairy herd from a foundation of common cows, through proper methods of feeding and management and through the use of a good pure-bred dairy sire. A careful reading of this Bulletin and a comparison of the photographs of the original cattle and those resulting from the experiments will convince any farmer that it is not beyond his means and capacity to build up a profitable dairy herd, even though it be a small one. Get that Bulletin and read it.

Bulletin Helps for Farmers

"Community Hog Houses" is the title of a 56-page Bulletin (No. 166) recently issued by the Agricultural Experiment Station of the Iowa State College (Ames, Iowa). The term "community" is used in contradistinction to the movable type of hog house and refers to a house for "a group of animals living under similar conditions or environment." This booklet, which covers the results of several years of experiment at the station, and a careful investigation of the design and construction of hog houses, should interest every hog raising farmer. It contains photographs, descriptions and plans of a number of types of hog house with cost figures on each. In October, 1914, this same experiment station issued a Bulletin (No. 152) setting forth the essentials of an ideal hog house and describing in detail the construction of several types of movable hog houses which had been thoroughly tried out at the station; this bulletin is still available for distribution.

That the clover leafhopper, attacking alfalfa, clover, cowpeas and vetch, does far more damage than is usually realized, is set forth in Farmers' Bulletin No. 737, just issued by the United States Department of Agriculture, which states that many of the losses caused by this pest are often attributed to poor soil and climatic conditions, since its minute size frequently enables it to escape observation. Full information regarding the nature and habits of the clover leafhopper and suggested methods for combating it are contained in this bulletin, which is free for the asking.

Two recent Farmers' Bulletins are No. 718, "Co-operative Live Stock Shipping Associations" (giving instructions for organizing and the outline of a constitution), and No. 725, "Wire Worms Destructive to Cereal and Forage Crops." Either will be sent free on request by the Dept. of Agriculture, Washington.

Boosting a "Peach Week" Sale

By A. J. BRADLEY

The eastern fruit grower who made money on his peach crop last year either had an exceptionally good market or a monopoly in his line not enjoyed by many growers. The year 1915 was a disastrous one for the majority of peach growers and few came out even on the crop. The breaking down of the large city markets, due to the unprecedented overproduction of peaches, caused a number of growers to prefer allowing the crop to decay in the orchards to shipping to a market that was already glutted. Faced with the problem of getting rid of about 650 baskets of peaches at a time when most housekeepers were buying them for a mere song, I enlisted the good offices of the manager of one of the department stores in a nearby town in their disposal. Earlier in the season I had shipped 50 baskets by express to the commission house in the city where I had been accustomed to selling, and in return I received a check for \$3.30. The commission man explained that I would be only inviting disaster to send any more peaches to that market for three weeks, at least.

Within four miles of the farm was a thriving town with a good, steady working population of about 16,000 people. I had sold some fruit to the dealers of this town and frequently the residents came out to the farm by trolley and bought peaches for preserving. I had never made any serious efforts to reach the people of the town, as the large city here before had taken all I could produce at good prices. The fruit trade of the town was dominated by an Italian who had grown wealthy and arrogant in the business. He usually made the prices which he and the other dealers paid for nearby fruit, and he generally managed to keep the best of it while others took what he did not want. This man offered 18 cents a basket for choice quality fruit, while he was selling peaches at retail for 40 cents and in some cases 50 cents a basket. This dealer's making more than 100 per cent. profit at my expense did not appeal to me and I determined to seek an outlet for the fruit in the town without peddling it from door to door, an expensive method with the scarcity of good help, due to activity in all lines of business in the town.

There were several vacant stores in the heart of the business section, but they could not be rented temporarily for less than \$100 a month, and this method of disposing of the fruit direct to the consumer was prohibitive. I sought out the manager of a department store, which did not handle groceries or fruit, and after some persuasion induced him to put on a special sale of peaches for the following week. I argued that it would be an entirely new line for his store and that the novelty of it would be sure to attract attention. The store handled glass preserving jars during the season and the manager admitted to me that he had more in stock than he would be likely to get rid of. I convinced him that he could hold the sale of peaches in connection with that of jars and other articles used in preserving time, including agateware.

It was midsummer and there was a lull in sales of any kind, and the manager fell for the idea that he could keep his sales force busy and at the same time shove out several lines while attracting housekeepers to his store during midsummer days when the clerks had little more to do than tell each other of the plans they had laid for vacation. He agreed to take 100 baskets of

The Jersey Bull "Sperfield Owl 2nd" 93684—Owned by Meridale Farms, Meredith, N. Y.

amounted to 175 baskets, while the manager assured me the sale had worked up the other departments, particularly the agateware and jar counters. The second day's sales amounted to 125 baskets and the orders kept coming in at a steady rate. The third day he disposed of 85 baskets, while on Thursday the sales were nearly the same. Friday and Saturday they dropped, as the latter part of the week is not favored for canning by the majority of housekeepers. The total sales for the week were 550 baskets, as follows: Monday, 175; Tuesday, 125; Wednesday, 85; Thursday, 70; Friday, 40; Saturday, 55. The fruit dealers were up in arms over the sale and tried to discredit the efforts of the department store. They asserted the fruit offered for sale consisted of culls from the big city markets and not choice fruit. Most of the residents of the town were familiar with the name of my farm and they saw that they were getting it on the baskets delivered. Toward the end of the week the dealers had a carload of peaches shipped in from a city commission merchant and sold them for 25 cents a basket. These peaches hurt the sale of our fruit to some extent, but they were of an inferior quality. The dealers glutted the market and lost money on the scheme, for the peaches cost them 20 cents in the city and they had to pay freight and hauling.

Had there been enough time the success of the plan for a "Peach Week" might have been greater. As it was, the

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The Place of the Dairy Cow on the Small Farm

By MRS. BLANCHE R. MARTIN

Most of the articles dealing with farm management tell of the big things—the 300 and 400-acre farm; the herds of half a hundred cows. They count their chickens by the hundreds and their profits or losses, as the case may be, by the thousands. Every year we see where the silo has been tried and found good, a new one going up beside the old one. Dairy notes tell of milking machines and artificial refrigeration until those of us who are short of "purse or acres lose sight of the fact that, working in a small way, with only a small herd and a few acres of pasture, by giving careful supervision and conscientious work, can make returns just as large as the big fellows do.

We have only 50 acres of land; 30 of this is hillside. Only four miles from a hustling little city, and three-quarters of a mile from a brick-paved pike. Land

ugly, pendulous udder is heavy and almost shaggy. I reckon the best way is to judge by the pail performance in the cow's ancestry. Good cows do not come by chance, and there will be boarders enough in even the best bred herd. Not all of us can get to a Babcock tester, but we all have kitchen scales and with them can keep a line on the milk production. If butter is your object, do as I sometimes do, save a churning, say 3 gallons of the cow's milk in question, weighing the milk before churning and your butter after, when a little figuring in percentage will give you a good practical idea of each cow's status on your farm. I thought I had a cow to talk about when my grade Jersey giving 6 gallons of milk a day, made 2 pounds of butter, yet a purchaser, this spring, of a Jersey-Guernsey cross breed of ours, has complained that her milk was thin; that it took two gallons to make a pound of butter. All I can say is that if she made butter at such a rate I wish we had her back!

When we had only two cows I practiced hand skimming and made good butter. When we increased to three we bought a cream separator and I think it has made good the salesman's assertion that three cows with a separator are as good as four without. I can't see any difference in the quality of the butter, but it surely cuts the labor down. The rest of our equipment is a cool cellar, an extra good supply of cold soft well water and a barrel churn. Cleanliness is next to Godliness everywhere, and in the dairy is the one prime essential. Our grandmothers made good butter with even less equipment than I have. They used plenty of hot water, lots of cold water, a bench on the sunny side of the house and enough elbow grease. Jars and pans must be scrubbed, scalded, rinsed and carried out to sun. The process seemed both endless and useless. They looked clean to us youngsters long before we were allowed to leave them, but since I married the farmer I have had ample chance to be thankful for the thorough training in grandmother's way. In all our modern dairies there is nothing that can take the place of plenty of hot and cold water and the purifying effect of sunlight on our utensils.

We sell our butter, and practically everything else produced on the farm, once a week to private customers in our home town. Ours is a splendid market town, owing to the constant drain of the mining and milling operations close around. I use a brick mold and waxed paper, and for seven months we get 35 cents, and 30 cents a pound the remaining five months. We are selling now, from three cows, 13 pounds of butter a week, and average about that the year around. Each week we sell a few gallons of butter milk to our customers, but the most of the milk is fed on the farm and no record kept of it.

In keeping our accounts we charge all feed raised on the place to the cows at the same price paid for that purchased. Feed for growing calves is also included in this account, and any animal bought; veals or cows sold are credited to them. We make no record of stock kept in our own pasture, but every season are obliged to pasture out two or three head of growing stock, or may be a dry cow. Our last year's record from Sept. 1, 1914, to Sept. 1, 1915, shows a net profit for three cows of \$190. We cared for three

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THE GARDEN

Edited by W. F. MASSEY

All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

The Celery Crop

While in this section August is the best time to set celery plants in their permanent position, in the greater part of our section July is the best time to set the crop for late fall and early winter.

From Philadelphia southward I believe that the Baltimore bed method of growing celery is best. The late Peter Henderson once said to me, when I asked him why he did not try it at Jersey City, that he would like to be able to but that the climate there was probably too cold for it, and they would have to continue to grow the crop in rows and lift and store in winter.

To grow celery in the Baltimore way one needs to have good strong transplanted plants with an abundance of fibrous roots, and plenty of them of uniform size, for it will be a bother to have little plants in the way in the beds.

Celery is usually grown as a second crop after some early crop like peas or lettuce. Better after a crop of lettuce which has to be very heavily manured, for the previous manuring is better than direct manuring for the celery, though during its growth and when the plants are dry a dressing of nitrate of soda between the rows will help greatly.

To grow the crop in the bed method the things needed are a planting board a foot wide and 6 feet long and two pieces of twine about 8 feet long, with pegs at each end, and a garden line. When the soil is ready, stretch the line on one side of the proposed bed. The 6-foot board is accurately squared at the ends and notches are cut on each edge 6 inches apart from ends and each other. Now set the board square with the line and set a plant at each notch. Move the board to coincide with the plants last set and set another row, and so on until the whole length of bed is planted. If more than one bed is set, leave 8 feet between the beds for earthing. When set there will be 11 plants in each row and the rows will be a foot apart.

Then the only thing to do is to keep the plants clean of weeds and cultivated, but let them alone when wet with rain or dew. To grow well and rapidly celery must not suffer from drought, and the best growers now use some one of the different overhead irrigating pipes. A clay loam retentive of moisture is best for celery, but where there is irrigation convenient the crop can be grown on sandy soil that would naturally be rather dry for it. Low black bottom or reclaimed swamp muck soil is admirable for the growth of fine looking celery, but will never make the solid, brittle stalks that are made on clay loam upland. As the season advances the outer leaves will grow heavy and inclined to fall over. Then comes the first use of the earth, the handling up of the crop. Beginning at one end of the bed we stick a peg attached to twine at one end of the row and take a turn of the twine around each plant in the row and stick the other peg at the farther end. The second string is used on the next row. Soil is now shovelled in between these rows and packed close to the plants by hand. Each pair of rows in the bed is treated in the same way. Some use rubber snappers to hold the leaves, or the plants erect.

After this handling there will be no further difficulty in the earthing, and as the nights get cool in the fall the

earthing of the beds is kept up just so as to keep the growing heart of the plants above the soil. The sides of the bed are carried up 6 inches beyond the ends of the rows, thus making the bed full 6 feet wide. The earthing is continued as the plants grow, until in November or when really hard freezing is threatening. Then the whole bed is earthed over 6 inches thick, and is covered thickly with straw and corn stalks, and bean poles laid over to prevent the straw from being blown off. Then the celery can be dug out as needed if the straw is thick enough to prevent hard freezing.

I have grown various kinds in this way, but have found that the dwarf sorts are better suited to the bed method, and the old Boston Market is the best of these, for it makes a lot of finely blanching offsets that are really better than the main stalk.

The self blanching varieties are better suited to the growing of the early fall crop as practiced in the North and in the lake region where they plant this crop in spring in rows less than 2 feet apart and mulch heavily between the rows with manure, and blanch with boards set on edge on each side of the rows. No cultivation is given in this method, but irrigation pipes are overhead and the big weeds are pulled out. This crop is sold before cold weather. I have seen very fine celery grown in this way at Cleveland, Ohio. But in our region the late fall and winter crop is about the only one.

I have long thought that we might grow the crop by setting the plants in cold frames made deep enough to accommodate them at full growth, and set the plants about 6 inches apart, and then protect them in cold weather with the double glazed sashes and have well blanching celery in winter without any bother or earthing up. The self blanching varieties would do for this, though they are of inferior quality to the green sorts blanching in earth. In fact, I consider the self blanching sorts better for table ornament than for eating.

For growing in wide rows and partly earthing in the fall and taking up and trenching for winter the Giant Pascal is one of the best varieties. To grow this the rows should be fully 4 feet apart, and in large plantations the earthing is largely done with the celery plow. The plants are taken up and either packed in cellars made for the purpose or set in narrow trenches as deep as the celery is tall and then covered with straw and boards. But from Philadelphia southward I believe that at least for family use the Baltimore bed method is the best, for the celery grown in this way and left without lifting is always brittle and snappy. Another point is necessary for the best celery; this is to be sure and get French grown seed, for it is much better than seed grown elsewhere.

The Garden in July

The Blood Turnip beet may still be sown. It is best at this season to use plenty of seed. I plant three or four seeds in a place about 5 inches apart. These bunches are then easy to thin out. I use Bastian's Blood Turnip beet.

The Danvers Half-Long carrots can also be sown for winter. Where I live, down here in the sunny southeastern corner of Maryland, these are perfectly

hardy and, with the beets, are left all winter in the rows where they grew. The tops may be frosted off largely but the roots seem to improve by the frosting. In colder climates take them up and set them perpendicularly in narrow trenches and cover with straw manure thickly and they will keep better than stored in a cellar. I have kept them in this way in a colder climate than Philadelphia.

Sow ruta-baga turnips now. A good plan is to make furrows wide enough for horse culture and use in them 500 or more pounds of a good commercial fertilizer. Bed on this with a furrow from each side and flatten half the ridge thus formed and drill the seed in on the bed. Thin out to 5 or 6 inches. For family use I prefer to sow the long or large white French turnip. This is a white turnip of the ruta-baga class, and is the sweetest of all turnips and keeps all winter without getting pithy. It is so hardy that here we can leave the plants where they grow, with a furrow turned to each side of the rows and can lift them all winter, as our soil is open more than frozen. Northward lift and put in heaps and cover with straw and soil.

Early varieties of sugar corn may still be planted and the best of roasting ears made, for the worms are not so plentiful in the ears as in those of the early-planted corn. In fact, where I live the only way we can get good ears for seed is by late planting. We plant now the Stowell Evergreen, but northward it would be better to use an earlier sort.

A few of the strap leaf turnips like the Early Milan, may now be planted for early fall use, but the main planting of the flat strap leaved turnips should be later.

Set now plants for winter cabbages in soils naturally retentive of moisture, if possible. Spray the late cabbages with lead arsenate 1 pound in 30 gallons of water, to destroy the green caterpillars. This will not poison the heads as they form from the inner bud.

Plants of Brussels sprouts are now set for heading just as frost comes. The little heads are best after touched with frost.

The Lucullus chard is now in its prime and is the best of all substitutes for spinach in summer. But where some spinach is wanted early in fall the seed may be sown now, but the main sowing should be deferred till later, of which we will have more to say.

When the earliest tomatoes get to making inferior fruits I clean them out of the way for late things, as the later plants are coming in with their best fruits.

My last setting of tomato plants was made the last of June. These are for the latest fruiting and to have plenty of well grown green tomatoes when frost arrives; these are wrapped in paper and stored in crates to be brought out to color up for slicing until Christmas.

Queries Answered

Ground Moles.—Mrs. H. C. P., Pennsylvania, writes: "Please state what to do to get rid of ground moles. They are so bad in my garden that I cannot keep anything planted. They cut off beans, beets and cabbage. They pull the whole plant underground."

There are several ways for combating moles. There are a number of kinds of traps which, properly used, will catch them. But to use these you must watch the runs and see which of them are being used, for the mole makes many runs that are only used once. Finding a fresh run, pack the soil down with the foot, and watch to see if it is again lifted. If so, then that is a commonly used run, and you can catch the mole. Another way is to get some carbon bisulphide, punch holes along the runs, pour a teaspoonful in each and cover it. This will kill moles and mice, and the mice are the pests that use the mole runs, for the

moles are after worms and insects, while the mice eat roots and bulbs. Another way is to plant castor bean seed around the garden. This is an old plan, and I find that the moles will surely avoid this plant. The carbon bisulphide must be kept away from any fire, for the fumes will explode as quickly as gasoline.

Bordeaux Mixture for Tomatoes.—W. R. B., Pennsylvania, writes: "Please give me receipt for Bordeaux mixture for spraying tomato plants."

There are several formulas for Bordeaux mixture, varying with the proportions of lime and copper sulphate. I generally use the 5-5-50 formula. Slake 5 pounds of fresh lime as for whitewash; then add water enough to make it 25 gallons. In another cask dissolve 5 pounds of copper sulphate in hot water; it dissolves more readily by hanging it in a gunny sack in the water; make this to 25 gallons. Then pour the two together slowly stirring all the while, and it is ready to strain into the sprayer. Of course, a smaller amount can be made in same proportions. It should be used at once.



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HORTICULTURAL

Edited by C. A. McCUE

Fall Bearing Strawberries

A number of our readers have been inquiring about the practicability of growing fall bearing strawberries. For the past twenty years it has been the dream of strawberry growers to produce a strawberry plant that would bear a crop in the fall. Many so-called fall-bearing varieties have been put upon the market, but it has been only within the last four or five years that we have had a fall-bearing variety that was a commercial success. Among all the fall-bearing varieties put out by nurserymen only two have as yet possessed real merit. And of these two only one has proved itself of great commercial value. The Progressive is the best of the fall-bearing strawberries and it is by no means perfect. Most growers who have grown the Progressive are loud in its praise. However, if allowed to bear a full crop in the spring, even this variety will prove a rather shy producer of a fall crop. To be able to harvest a remunerative fall crop one must not allow the plants to bear a full crop in the spring. It is asking too much of the plant to expect a crop of berries twice a year. To those who are contemplating trying growing of fall bearing varieties we can heartily recommend the Progressive. For the man who wants a few plants in his back yard, to furnish him berries for the table in the fall, the Progressive will not disappoint him. As a commercially profitable berry grown on a large acreage, it is doubtful if any of the fall bearing strawberries will prove very profitable. The Superb has also met with some success as a fall berry, but it is not as good as the Progressive.

Cover Crops

Every fruit grower should now be considering the cover crop question. Too few orchardists realize the necessity of good cover cropping in both peach and apple orchards. It has been demonstrated time and time again that in cultivated orchards cover crops are essential to good orchard management. Cover crops should be sown between the 15th of July and the first of August. As a general rule, they should be sown in the peach orchard a little earlier than in the apple orchard.

On the lighter soils, cultivation tends to "burn out" the humus content of the soil, thus impairing its water holding capacity. On such soils it is necessary to maintain the humus content, and in most cases this can best be done by turning under a cover crop in the spring. In the North cover crops are essential to properly ripen the wood and buds before winter sets in, and thus prevent winter-killing; even in as mild a climate as Delaware, it has been shown that peach buds can be brought through the winter in better condition if the orchard has been cover cropped. Cover crops also utilize soluble nitrates in the soil and conserve them, whereas if the ground had been left bare this valuable plant food would have been leached out and lost beyond recall in the drainage waters.

There is no one orchard cover crop that is ideal. All have their advantages and their faults. The cover crop must be adapted to orchard conditions and may be varied from year to year accordingly to the needs of the orchard. When the land is deficient in nitrogen, and most soils are, it is best to use a nitrogenous cover crop, such as the clovers, soy beans or cowpeas. At the Delaware Ex-

periment Station it has been found that in peach orchards cowpeas make one of the most desirable of cover crops. They collect a large amount of nitrogen from the air and harden the trees in good shape in the fall. One drawback to the cowpea is that it winter-kills and leaves the land bare over winter. Soy beans have the same fault. One of the great advantages of cowpeas in the peach orchard is that they grow luxuriantly in the shade, better, perhaps, than any other plant commonly used for cover cropping orchards.

Crimson clover is an ideal cover crop, where the shade is not too dense and the plant does not winter-kill. There are few orchard areas in the U. S. that are climatically suited to growing crimson clover, but when it can be grown it is the cover crop par excellence.

Winter vetch in combination with rye makes an excellent cover crop. One of its faults is that in climates where the spring opens up early, the vetch does not make much of a growth before the spring plowing. The rye, however, furnishes a large amount of humus when turned under. One must be careful with rye, because if left too long in the spring before turning under it gets hard and woody, does not decay quickly and injures the water movements in the soil and may cause serious injury to the trees if the season should prove to be dry.

No matter what the cover crop, something should be grown in the orchard in the fall. A crop of weeds is much better than nothing, and, in fact, many weeds make excellent orchard cover crops.

Thinning Fruit

Many peach and apple trees bear more fruit than they should. It has been proved beyond all contention that it pays to thin both peaches and apples, and those of our readers who have trees overladen with fruit should see to it at once that a portion is removed. Thinning, while it cuts down the number of fruits on a tree, does not lessen the yield as expressed in the terms of baskets, barrels or bushels. Thinning makes better, and larger, fruit, makes more saleable fruit, decreases the number of culls and conserves the energies of the tree. In seasons of heavy production, judicious thinning may be the means of preventing the breaking of branches, and in extreme cases the practical ruination of the tree. The writer has seen peach, pear and apple trees broken down by excessive bearing and left in such condition that they were practically worthless for a year or two afterwards.

Some varieties of fruit need thinning much more than others. The Elberta peach responds quickly to thinning, while the Belle of Georgia seems to be able to size up a large crop without hard thinning. The Paragon and York Imperial apples are not in need of thinning as greatly as the Winesap and the Stayman. In growing Winesaps one of the great problems is to get size on the fruit. The Winesap has a tendency to set too many fruits and a good liberal thinning will allow the remaining fruits to size up, be of a higher grade, and yet not decrease the yield. Stayman has a fault in that at harvest time it runs too many sizes. Thinning will eliminate the small sizes and give a more uniform grade of fruit at harvest. In fact, the writer knows of no variety of apple that offers greater possibilities for thinning than the Stayman.

Thinning peaches is a fairly simple operation, as the excess fruit can easily be pulled by hand. Just how much a tree should be thinned depends quite largely upon judgment. A good, thrifty peach tree in good health, making good growth and with bright green foliage does not need the heavy thinning that a weaker tree does. Some trees should be thinned to 4 inches between fruit and some to 6 or even 8 inches.

The perfection of spraying practice has increased the necessity for thinning, because proper spraying will cause more fruits to remain on the tree and lessen the June drop. At all times the grower should have as his aim to grow the trees to fit the crop rather than to grow the crop to fit the trees. Overbearing can be remedied after the crop is set. Underproduction cannot.

In thinning apples the operation is comparatively simple and easy, provided the proper tools are at hand. Unlike the peach, the apples should not be pulled by hand. Pulling by hand will often, in fact usually, with the ordinary workman, pull not only the fruit off, but the fruit spur as well, thus permanently injuring the fruit producing possibilities of the tree. Apples should always be cut off. The common shear used in harvesting grapes is an ideal implement for thinning apples. Workmen soon become used to them and very expert. In fact, the novice is surprised to find how easily, efficiently and rapidly apples can be thinned with the grape scissors.

Every man who wishes to grow fancy fruit should thin. If you have not already thinned your heavily loaded trees do so at once.

Boosting a "Peach Week" Sale

(Concluded from page 277)

scheme was hurriedly undertaken and just as hurriedly rushed to completion. If adequate preparation had been made several weeks ahead the effort could have been carried out on a larger scale and with better prices and a more widespread appeal to the consumers.

One thing was demonstrated to the satisfaction of myself and the manager of the department store, and that was that it is an easy matter to arouse the interest of the feminine portion of the buying public—and that is nine-tenths of the buying public—in a special sale of fruit carried on through an entire week when the sale is brought to their attention and efforts put forth to make the showing attractive as well as timely.

Another season we hope to begin earlier with a campaign of education leading up to "Peach Week." This will consist of timely articles in the newspapers of

the town telling of the coming event about three weeks before the sale. The editors of the local newspapers are always willing to co-operate in a movement of this kind. The advertisements will carry advance notices of the sale of peaches and glass jars, preserving kettles and the necessary utensils needed in every household about the time the fruit season comes along. In the advertisements there will be inserted receipts for canning and preserving peaches and for making all the numerous appetizing dishes into which peaches enter as a prime ingredient. The delivery wagons of the store and the farm wagons hauling the peaches will bear muslin streamers reminding the shoppers well in advance to lay plans for "Peach Week."

The price I realized was not one calculated to make a peach grower wealthy, but it was net and without shipping and commission charges. I managed to dispose of the fruit without a loss and at the same time built up a plan which may come in handy in future years when peaches are not such a glut on the market as they were in 1915. Were conditions normal, peaches, I am sure, could be disposed of locally in the nearby markets at good prices and without the expense of shipping to the commission houses of the large cities. The publicity given to the sale and my farm more than made up any deficit, and another year will serve to furnish a local outlet for 1000 baskets of peaches where formerly it was difficult to dispose of one-half that number.

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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

The Summer Seeding of Grass

As land becomes less fertile through continued cropping the more difficult it is to secure a good stand of clover and timothy when sown with wheat as a nurse crop. While this method of seeding grass is largely followed in most sections it is quite easy to improve both the stand and quality of the hay crop by sowing the seed independently. The Eastern States have very desirable weather conditions for late summer seeding, as much of the annual rainfall comes during the months of July and August. Farther west, beyond the Alleghenies, summer droughts are more frequent, rendering the task of fitting the land more difficult than farther east.

The fact that grass can be successfully sown alone makes it possible, in case the clover fails in the wheat, to maintain the order of rotation, as the wheat or oats stubble may be plowed, fitted and seeded in time for the grass to make a good growth before winter. The time of seeding is important, as clover must be well established in order to pass the winter in good condition. Thus it often happens that in order to save both time and labor the wheat stubble is disked. With certain soils that are not too dry this can be very easily done. In most cases it will be advisable to break the land so as to get rid of all weeds. Where

the land is plowed some time should elapse before seeding, in order that the soil may become well settled. Grass seeding requires a compact, level seedbed with a fine mulch at the surface. Where the time is short for preparing the soil diskings is often preferred. In the latitude of Philadelphia the seed should be sown by the first of September. Of course, other factors may determine the time of seeding. On a rich soil the seeding may take place somewhat later than where the soil is in poor condition. In most cases the latter week of August and the first week of September will cover the period of the most successful seedings.

Since clover usually occupies the third or fourth place in the order of crops in the rotation, that is, coming after corn and perhaps two crops of wheat, it is well to see that the soil is well supplied with lime. The previous crops have put the land in a poorer condition on account of their demand for plant food, hence no pains should be spared in making the soil favorable for the young clover plant. If you are in doubt as to whether the soil needs lime call in your county agricultural agent and have him examine the soil, or send a pound of the soil from the field to your state experiment station, with a request that the lime requirements of

the sample be determined. Methods have now been devised by which the actual number of pounds of lime per acre required to sweeten a soil may be determined. Apply enough lime to thoroughly sweeten the soil—and this should be done several days before seeding if quicklime is used. As the clover has followed at least two grain crops it will be necessary to provide some available plant food. Well decomposed stable manure makes an excellent dressing to harrow into the soil that is being fitted for grass. In some cases, however, considerable weed seed may be introduced by the manure. In this case the weeds are not likely to prove a serious menace if they are annuals, as they will be killed by the first frost. The perennials, on the other hand, will live through the winter and be found in the hay crop the following summer. If the manure can be applied sufficiently early it is possible to destroy the most of them by frequent harrowings until time of seeding. In the absence of manure it is well to use a fertilizer carrying 2 to 3 per cent. of available nitrogen, so that the grass will make a good start, and 8 to 10 per cent. phosphoric acid. At this time potash cannot be procured, but ordinarily it should constitute from 5 to 6 per cent. of the fertilizer mixture for grass. The fertilizers should be applied at the time or just previous to time of seeding to grass. It is just as necessary to fertilize grass, when sown in this manner, as any other crop, and the results will be even more satisfactory. There are cases where fertilizers will not be necessary, as after a crop of early potatoes that have been heavily

fertilized. The longer the land is to remain in grass the better preparation the soil should have in the way of tillage and treatment. An item of this method of seeding grass is that the ground is left quite level and free from furrows and ridges, making it easier to harvest the crop.

If the seeding has been made in the proper manner the grass will be 3 or 4 inches high by the first frost. With this much growth it should pass the winter well. If manure has not been applied at the time of seeding it is often a good plan to topdress during the first fall or winter those portions of the field that are especially thin.

The quantity of seed used should be ample, as a full stand from the start is necessary in keeping the land free from weeds. A mixture of timothy, red clover and alsike clover makes a combination that is excellent. It seems that the alsike clover helps to fill in the more crowded stands of the other plants and results in producing a heavier tonnage per acre. Where the land is inclined to be wet, red top is often included in the mixture. However, if the hay is to be placed upon the eastern markets the red top will lessen the commercial value.

Summer seedings of grass made upon specially prepared land are greatly benefited by a topdressing of nitrate of soda in the spring. An application of 100 to 150 pounds of nitrate in the early spring will often double the yield of hay. Where manure has been applied during the winter the commercial nitrogen is hardly necessary. Summer sown grass, if properly put in, will be practically

free from weeds, and by topdressing in the spring a large yield of prime quality hay can be secured.

More attention should be paid to our grass crops, especially where clover forms a large part of the mixture. As ordinary farm practice goes the cereal crops receive first attention and the clover left to make the best of conditions that are anything but favorable. When we consider the fact that clover forms such an important part in the scheme of crop rotation, that it serves to build the soil as well as to furnish a crop, it seems that more consideration should be given the requirements of the keystone crop of the rotation.

In conclusion, a well prepared seedbed, limed, fertilized and seeded to timothy and clover during the latter part of August or early September will provide conditions for the main crop of hay.

Threshing Wheat Early

Where the anguimoth moth, sometimes incorrectly called the weevil, is prevalent it is best to thresh the wheat as early as possible. The moth works in the stacked wheat either when put in ricks or barns. Wheat in this condition is so bulky that it is not easy to treat it successfully with carbon bisulphide, the remedy usually applied. However, if the grain is threshed and placed in the bin it may be easily and effectively treated. Wheat threshed directly from the shock early is less affected in the bin than late threshed wheat, because the eggs of the insect seem to be deposited on the chaff and straw of the wheat and does not have time to infest the grain if the wheat is separated promptly. Many thousands of bushels of grain are lost each year through this insect alone. There is little danger from loss if the threshed grain is already infested, providing it is in a tight bin that can be closed up. A pint of carbon bisulphide is sufficient to treat a hundred bushels of grain. Place shallow vessels over the surface of the grain in the bin and pour into them the liquid which evaporates quickly. The fumes being heavier than air, sink to the bottom of the bin and kill all insect life. Keep all lights and pipes away, as the gas is explosive. Grain so treated is not injured for seeding or milling purposes.

Queries Answered

Oats and Alfalfa.—C. T. H., West Virginia, writes: "Will you please give me advice about my alfalfa? I sowed it the last of April—inoculated with 'nitragin' culture—along with oats, and have a fine stand of alfalfa. We have had a great deal of rain and the oats have branched out until the stand is much thicker than I expected it to be. The alfalfa is about 25 inches high as the oats in some places—12 to 14 inches. Now what is the best for me to do, cut the oats now or let them ripen? If I cut should they be raked up and hauled off? It is a fertile piece of land, well limed."

Since your alfalfa is so large it would be best to cut the crop when the oats are in the dough stage and make the entire crop into hay. Be careful not to cut the alfalfa too close, say about 3 inches high. If you cut now you may injure the alfalfa somewhat and lose the oats. By cutting later you can get a fine cutting of hay. It is likely that you will get another cutting, possibly two more, this year.

A Standard Type of Farmers' Road

Monroe county, Michigan, is building 40 miles of 16-foot (standard) road which is attracting widespread attention, especially in agricultural districts. The construction of this road represents radical departure from common practice. Briefly described, it will be a composite road in which will be combined the best features of three standard types. The Monroe county taxpayers, chiefly farmers, are using the stone of the macadam road, the asphalt of the bituminous road

and the Portland cement of the concrete road. Each material will be confined to the purpose to which it is best adapted. The road will have a 5-inch concrete foundation with substantial 6-inch concrete curbs at the sides, thus making a continuous and shallow trough of this material. Upon the concrete foundation, and confined by the curbs, will be placed 2 inches of asphalt macadam. The specifications call for cement guaranteed to pass standard specifications and a natural asphalt.

Quite as important as the sound structural features of the road is its low cost. The contract for the first 12 or 14 miles included ditching, grading and culverts, as well as the laying of the foundation and wearing surface. The entire cost will be only \$13,000 a mile. Deducting 19 cents per square yard for ditching, grading and culverts, the cost of the foundation and wearing surface will be only \$12,000 per mile, which is \$3,000 less than the present price given for all-concrete roads by the authorities in that type of construction. They now fix the cost of all-concrete roads of like width at \$15,000 per mile. The economies effected by the adoption of this type of construction are apparent. By confining concrete to foundation purposes all of the difficult and costly engineering details prescribed as essential to the successful construction of concrete roads are eliminated. The foundation will be laid rapidly and will provide a firm and unyielding base for the wearing surface. No material exceeds concrete in dura-

bility when used as a road foundation and protected from extremes in temperature and moisture content by a proper wearing surface.

The asphalt macadam will provide a mudless, dustless and resilient wearing surface adapted to all types of traffic. It will not expand or contract and can be repaired easily and at low cost.

This road, with its sharply defined curbs and unbroken and pleasing wearing surface, will be as attractive as any park highway, while the cost is below the price many states are paying for water-bound macadam roads.

Roads of the same type have been constructed here and there in other sections of the United States and have given excellent service. It was stated recently in "Engineering News" that streets of this type had been in use for 10 years in Newton, Kansas, without requiring repairs. This would indicate that the road will be sufficiently substantial to more than meet the requirements of rural traffic.

No desirable feature of any other types of road has been eliminated. This adoption of a standard type would simplify matters for engineers and contractors, making good results more certain than can be hoped for in the case of other types of roads. But most important is the saving to the taxpayers through greatly reduced initial cost and low maintenance. If adopted as a national type further economies would follow through standardized methods of construction and improved machinery.



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How much fertilizer would you use per acre? Would you use Lime with it?

To aid our farmer friends in securing the greatest profit from their wheat crops we have published a practical booklet entitled "Winter Wheat." All of the questions mentioned above and many others are answered in this booklet. It will well repay your careful reading. If you will tell us the number of acres of wheat that you intend to sow this season we will send you a copy free of charge.

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1857 THE BUSINESS FARMERS' STANDARD FOR NEARLY SIXTY YEARS 1916

POULTRY

Edited by F. V. L. TURNER

All letters, inquiries and requests in reference to poultry, should be addressed to the Poultry Editor of The Practical Farmer, Philadelphia, Pa.

Practical Poultry Talks

Doubling Poultry Profits

In the City of Philadelphia there was held, in the week ending June 30th last, the largest convention of advertising men ever gathered together.

There were speakers upon every subject relating to every phase of business getting in the United States. Among them one had the following to say of farm papers and their work:

"To the problem of more profitable farming the farm paper devotes itself with a sincerity of purpose no other paper or class of paper applies to any problem. Every word, every line, every article is how to make farming pay. How to cut out wastes. From advice to the wife and children on the conduct of the garden, the economical feeding of poultry, the best method of increasing the egg production, the production and handling of the products of the dairy, to the carefully balanced ration, suggestions to the farmer for the feeding of his hundreds of steers in the feed lot that the last ounce of fat may be put on from a given quantity of food, information on the culture of the bonanza alfalfa crop, every thought on the part of the editor of the farm paper is how to help his readers make more money, get more production, that he may find it to his advantage to stay upon the farm and in that way serve each of you and every other business in America. You should never go to bed without feeling in your heart a debt of gratitude to the American farmer, and remember that the publication he prizes most, his greatest helper and adviser, upon the testimony of the United States Department of Agriculture itself, is the farm paper. The department makes careful research to find the best method of solving the farmers' many problems and after careful investigation the department makes the statement that 90 out of every 100 farmers get this information from the farm papers rather than from the department bulletins. It is a tremendous fact that our great Agricultural Department would be only 10 per cent. effective except for the wonderful co-operation of the farm paper."

The above statement is repeated here for two reasons; first, because egg production was touched upon; second, because the fact is made known that only 10 per cent. of all farm knowledge emanates from our great Agricultural Department at Washington, and this 10 per cent. represents the average knowledge given out by all departments. Conclusively there is not 10 per cent. of the poultry knowledge of this country furnished by the Washington Department—the farm paper furnishes the farmer with nearly 100 per cent. of all the knowledge he collects.

Another speaker told of how, in a little community of 300 souls, where he conducted a general store, he had taught the farmers' wives how to double the egg yield by breeding from trapnosed hens and how one of his pupils, a farmer's wife, past middle age, had bought an automobile with egg money. And yet the Federal Government has never pretended to offer a single suggestion to the farmer as to increasing his egg output by line breeding or by the use of the trapnose.

Line breeding with poultry is the same as it is with horses, cattle, sheep, hogs or dogs and is intended to perpetuate the good qualities while weeding out the bad, the trapnose serving the same purpose as a pedigree sheet does for a race horse or the scale and Babcock tester do for the dairy cow.

Line breeding is the only known means of increasing egg production, when all other things are equal; that is, in housing, feeding and care.

The trapnose indicates which individuals shall be used for breeding, line breeding then serving the purpose of continuing from mother to son and from father to daughter the good of the originals found by trapnesting.

As a study, line breeding is more interesting than it is simple; as a means to an end it is impossible to duplicate, and any one who can read and remember only to look at a simple line chart each spring can practice it.

In order to improve conditions surrounding his little community the storekeeper above referred to stated to the writer that he had induced every farmer within the 48 square miles he served with his general store, to trapnest his layers and that the number of eggs he annually handled had more than doubled because of the use of this hen history making device.

Trapnoses have been written about before in these columns and have been illustrated therein and they are now again urged because of the necessity for more eggs and because the farmer is entitled to every extra egg that very little labor, and scarcely any expense, will produce.

One of the essentials to doubling poultry profits is more or less restricted range; the hen that follows the plow for her living cannot build into eggs the few insects she gathers up—it requires more than that.

Feed before the fowls at all times, the egg making kind, does not mean more labor; in fact, it means less, because a pan full of dry mash will last for several days, and a large hopper, self feeding, will last for a week or more and the hen does not run her legs off hunting a bug here and a worm there. Naturally, the hen will stay closer to the source of food if permitted to, and the grain need only be fed once a day, in the late afternoon. Under this treatment range becomes shorter and can be still further shortened by enclosures.

Left to her own resources, the hen will eat all day; feed her plentifully in the morning and she goes beyond her digestive capacity, and suffers in consequence. If she can eat as nature requires, nearly every moment of daylight, her digestion is not disturbed and perfect assimilation is permitted and the egg results.

A full grain meal at night is slower of passage from the crop to the gizzard and does not overtax the mill that grinds for eggs; also, it is heat producing to a greater extent than ground mash and the green food that is picked up in a day's wanderings.

Grit is as necessary to the hen as teeth to a horse and should be liberally supplied just as should oyster shell and charcoal.

But above all things trapnose and know the layers, from their first egg until the one is laid that will be hatched or rejected.

What We Are Asked

Starting a Poultry Yard.—H. G. B., West Virginia, writes: "I want to start a poultry farm. Would you advise me as to the best kind of laying chickens to get? And what kind of chicken house to build?"

White Leghorns and White Wyandottes (so bred that they rarely become broody) are the two best laying varieties known. Leghorns lay white eggs and Wyandottes brown. A shed-roof house, open front above 3 feet from the floor line, 16 feet deep and as long as required, is the accepted house. Allow 4 square feet of floor space for each fowl in winter; twice the number can roost in any house if range is available and snows do not lie on the ground long. A house 16 feet deep and 50 feet long will contain 800 square feet, or will accommodate 200 layers and 20 males. The rear of the house should be 4 foot studs, front 10-foot studs. For rafters spaced 2 1/2 feet centers, use 18-foot by 6-inch lumber, allowing all the extra length on front overhang, except 4 inches in rear.

Sebright Bantams.—J. H. W., West Virginia, writes: "Will you please tell me how Golden Sebright Bantams originated, or, in other words, what cross is used?"

Sebright Bantams were originated by Sir John Sebright, an English fancier, about 30 years ago, but no accurate history is obtainable as to the exact varieties used in their making. Silver Spangled Polish is a part of their make-up in one of the varieties, and Golden Spangled Polish in the Buffs. No further information can be had at the moment.

Liver Trouble.—J. R., West Virginia, writes: "Will you please tell me how to cure liver trouble? I have tried several of the remedies and have not been able to find out if it does not keep them in perfect health. I lose so many in the late spring and early summer."

There is no such thing as a cure for any disease, animal or human. There are several remedial agents which, in combination with nature, relieve abnormal conditions of the tissues and organs, nature doing what no agent can accomplish alone.

In the case you state, without giving actual symptoms, wherein you have used some preparation for stimulating egg production, you have probably brought on a condition of the liver, intestines or of the whole organic structure which has caused death, over stimulation being the primary cause. Fowl life does not require stimulating condiments for any purpose—for neither eggs nor health.

Of course, tainted feeds can and do frequently produce what is, in ignorance, called liver trouble, but this cause can be quickly removed, so far as spreading the trouble is concerned, and also affected fowls relieved by removal of the offending article of diet, such as tainted beef scrap, bone meal, musty or moldy grain, filthy drinking water, putrid matter of any kind, etc. Table scraps can become tainted very quickly, especially fish. Clean quarters are also required to prevent any unclean habits among the flocks. A remedy of value in such cases as we assume you have had trouble with consists of the dose, for each affected bird, one teaspoonful of sweet oil every day until three doses have been given, and if the droppings, by their yellowish cast and liquid nature, do not indicate bowel or liver disturbances, mix a teaspoonful of turpentine with the first dose of sweet oil in case worms are present. The succeeding two doses of sweet oil should not contain the turpentine. Feed on sour milk and bread, mixed well in a soft paste.

Bumble Foot.—W. K., Pennsylvania, writes: "I know what bumble foot is, but I do not understand why my hens have corns between their toes. Can these be removed without danger, or prevented?"

Yes, they can be removed without danger and can be prevented in the same hens and all other hens. The whole trouble is in the roost. Ever closely watch a hen roosting in a tree limb? She always selects one large enough to fill her ladyship, must be large enough to prevent her toes from entirely enclosing it. If, when she sits down on the limb her toes come too close together, she moves along the limb to a larger part or finds one larger, until she is comfortable muscled. Remember that a hen, to sit down, must close her toes as a human foot; only the hen is compelled to bend in order to sit down, because, bending, her second joint, or knee, automatically closes her foot. This is the reason she can hold on to the roost when she sleeps.

—and the strongest wind cannot blow her off. If the roost or limb is too small she sways backward or forward because of the lessened grip and the sole of her foot and the small web between her toes become calloused. If the corns protrude from top of web they can be removed with little danger by pushing them downward, but the foot should be thoroughly cleaned to prevent infection of the raw surfaces which will be left. Place the bird on clean straw for a few days and feed lightly.

To prevent corns round off each edge of a 2x3 or 2x4 scantling, set the round, ed 2-inch edges up and the corns cannot happen.

Fattening Cockerels and Picking Breeders.—M. J. M., New York, writes: "We have about 40 White Leghorn cockerels two months old and would like to know if it is too soon to lock them up for fattening as broilers?"

Pen up cockerels at once, as the market for broilers is rapidly going down in price. Feed strongly all they will eat of any good fattening ration, one of which was published in a recent issue. As soon as the birds appear to be losing their appetites get them to market.

Next year's breeders, if you mean males, should be the sons of heavy laying mothers, proved by a trapnose. If this is not your method of operating your chicken plant, the next best way (but not as sure, by any means) is to pick the best developed, with bright, protruding eyes, wide apart, heavy legs, long back and medium high tail. Also, have the males wide across the hips and with well developed combs and wattles. Both males and females should be so built, and in addition they should be heavy around the ruff, or strictly, they should have a well set abdomen.

By all means trapnose at least enough pullets next fall and winter to pick out heavy laying yearlings the following year, and if any 200-egg birds are found try hard to keep track of their brothers and next spring mate these brothers to the hens that produced them.

Worth While Suggestions

Unless all signs, omens and predictions fail, the price of eggs next fall will cause the hen to shed tears.

Fine feathers never made an additional egg.

Our neighbors' cats are just as regular as spring; both come at the same time the baby chicks come.

In these warm, muggy days gather the eggs twice—they will be better in the cool cellar than in a hot nest with several hens taking turns at heating them up every now and then.

A cool drink for the hot birds in the middle of the day is as welcome as a flock of insects.

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OUR EXPERIENCE POOL

All our readers are invited to contribute their experiences on the topics under discussion. \$2.00 will be paid for the best, and \$1.00 for the next best contribution, and 50c for each other article published. Contributions must be in our hands 15 days before date of issue.

Topic No. 1200, Aug. 1.—What forage crops have you raised for your swine, and on what summer pasturage do you note the best and most economical gains? Give particulars as to your plan of summer feeding of swine and your practical observation as to most successful methods of handling at this season of the year. Limit your manuscript to 250 words.

Topic No. 1201, Aug. 15.—Silos on Eastern Farms. There are few farms in the Middle West and West which do not have one or more silos; our eastern farmers do not seem to have taken them up as rapidly or enthusiastically, but they are on the increase now. We want the experiences of eastern farmers who have silos, for the benefit of those who are contemplating building them. Tell what type of silo you have, its capacity, why you like or dislike that particular type, what you gain by the use of the silo and how you fill it. Limit yourself to 250 words (or less).

Topic No. 1202, Sept. 1.—The Rural Schools. Does the rural school in your community educate your children as you want them educated? Does it teach the rudiments of agriculture? What suggestions can you offer for the betterment of rural schools, based on improvements made in your own or that you have heard of in other districts? Two years ago we had an "Experience Pool" on this subject and received many interesting contributions; we and our readers want to know what advances, if any, have been made since that time, and principal causes for complaint now. Limit, 250 words.

Topic No. 1199.—Sheep on Eastern Farms.

Mrs. R. S., Upper Marlboro, Md.—Whether sheep in large flocks as a main dependence in farming can be made to pay I cannot say, but our experience with a small flock has been encouraging, to say the least of it.

Without any previous experience we started, six years ago, with 12 grade Shropshire ewes and ewe lambs which I rather think sheep breeders would have called scrubs. They cost \$5 each, the ram \$8. We saved the best ewes and most promising ewe lambs and have now increased our flock to 20, changing rams twice. They are kept in an open shed on the southeast side of a tobacco barn at night. In front of the shed is a yard enclosed by a dog-tight fence. In this they are shut every night during the lambing season and while the lambs are young. We believe that it is largely owing to this simple precaution that we have so far escaped losses from dogs.

In an ordinary pasture sheep take care of themselves for eight months of the year, unless the winter be unusually long and severe. Twice a day during the remaining four months, that is from about Dec. 15th to April 15th, they are given a half bushel of short corn on cob, bran or crushed corn, and when the ground is covered with snow they have clover or mixed hay in small quantities, also corn fodder on stalk. The work required to care for them takes half an hour twice daily for four months, and a day at shearing time. We have lost but one ewe at lambing time, but some years we have lost young lambs at birth.

We have never sold mutton. The lambs are sold when weighing 60 to 70 lbs. to dealers who haul them to Washington. A few have been sold direct to hotel keepers. The wool is sold to a local buyer for a wholesale wool manufacturer, saving us freight and commission. I can give proceeds for two years only. In 1915 27 lambs averaged \$5 each, or \$135; wool about \$40. In 1916, our lambs, 24 lambs, at prices from \$6 to \$8, brought \$155.40; 155 lbs. of wool at 38 cents, brought \$58.90, a total of \$214.30. If there is anything on the farm that pays better I want to hear about it.

J. E. F., Wellsboro, Pa.—Thirty to forty years ago every farmer in this locality had a flock of sheep ranging from a dozen to 100. In those days the average farmer thought his farming was not complete without sheep. Now a flock of sheep is a curiosity to most of the people, as very few farmers keep them. We have kept more or less since we started farming, except three or four years, and we find them very profitable, indeed. Wool has been low in price, ranging from 15 to 24 cents per pound, but it generally paid for the wintering of the ewes, leaving the lambs to pay for work, etc.

The advantages of sheep are many. First, they keep all weeds down, and can be kept when feed is very scarce, though good clover and blue grass pastures are preferred. They enrich the soil by

spreading the manure evenly over it. They furnish an income two or three times per year, viz., wool, mutton and lambs. We got out of sheep a few years ago, but started in again with a few old culls, and now have 16 grade Shropshire ewes and 20 lambs. These 16 ewes were fed during the winter months about the same amount that we fed two cows. The ration consisted of silage, clover hay and oat straw. For a change we fed silage, morning and night, clover hay at noon and a grain ration of peas and oats and barley mixed and ground together. This grain ration was fed on the silage from February or about the time the lambs commenced to drop. We make a practice of keeping the ewe lambs and selling off the buck lambs and fat sheep. By so doing we keep up our flock to the highest standard, but do not get as many lambs as we would if we kept all older sheep, as a yearling hardly ever raises more than one lamb. For several years we have sold our buck lambs to a local butcher. We let him know what we have, and many times he will come and get them as needed for his trade. This method gets us the highest market price, also takes the lambs off the old sheep during June, July and August; thus the old sheep get fat to go into winter quarters. We aim to use a purebred buck. We keep our sheep under shelter during stormy weather, but let them run out on nice days, as sheep need exercise, and will not produce good, healthy lambs unless they have plenty of exercise.

Now as to whether they are profitable or not, I will leave to the readers. The 16 ewes can be kept on most any eastern farm in some brush patch during the summer months, and with very little outlay of labor can be fed and cared for during the winter months; the lambs and wool will bring about \$200 and the 16 ewes are left—or what is better, sell some of the old sheep that had more or less trouble raising lambs, and make the flock better by keeping some of the ewe lambs. We dock the ewe lambs when a week to ten days old, and have no bad results.

C. E. D., Cumberland, Md.—To the small farmer sheep raising is a most valuable aid. Our farm is poor and hilly, but affords acres of valuable grazing land for sheep. We secured 15 Shropshires, headed by an imported ram. We have a warm, clean stable for lambing time and cold, wet nights; and an open shed, with hay rack, for fair days, both enclosed by a tight fence 10 feet high, making a dog-proof fold. And in this the sheep are secured every night, so that we have never lost one by dogs. In fly season each gets a dab on the nose with the tar paddle, to eliminate the grub flies; and the rear fleece of the ewes is washed and trimmed as often as soiled. Bedding and quarters are cleaned with shovel and hoe. The ewes are fed oats and corn when needed, with a pail of tepid water just after parturition. They are talked to and played with until as tame as chickens. Particular care is taken of the lambs, of which they usually have twins. The profit of the flock may be judged of by the record of one ewe. First year she dropped one lamb, which was sold at a good price in the fall; the second year two, and the third year three lambs, the odd one being raised on the bottle. Including the six lambs, the fleeces of the sheep for three years, and the price of the original ewe, that one sheep gave me more lump money at a time when corn was scarce than I ever made before; and the flock did as well. We marketed by letting the butcher call for any sheep that we decided to sell, and got the worth of them on the hoof. But a neighbor butchered his himself, sold the meat to hotels and private customers at retail prices and made more.

H. C. M., Ashville, N. Y.—Sheep certainly can be raised profitably in the East, both for wool and mutton. We have never kept a large flock—at present we have only 10 grade Shropshires—and as a rule we can make more money out of these sheep than out of cattle. Last year we had a little bad luck and averaged only about \$7 per head, but

have at various times averaged better than \$10 each; and the work as compared with cows, is practically nothing. We consider it of prime importance to have the flock headed by a good purebred ram, and it always pays well to breed for a heavy fleece.

Of course, some people are troubled with dogs, but we never have been. We have the pasture so arranged that the sheep can come up to the barn at any time, and they are always around the barn at night.

We are only 14 miles from a market that is always ready for all they can get at top-notch prices. Indeed, practically all the large cities are in the East and the demand for mutton always exceeds the supply.

S. R. K., Delmont, Pa.—At the present time the outlook for the eastern sheep breeder seems very promising—even though dogs have in many instances caused breeders to become discouraged.

It is generally believed that the breeds in which both wool and mutton qualities are combined are the most profitable for eastern farmers. The prevailing breed in this section is the Shropshire.

Ewes should be bred to drop lambs from Jan. 1st to March 1st, depending upon the conditions under which they are to be cared for. January lambs come upon the market first and usually command the highest prices, while later lambs go on pasture at an earlier age and the cost of feed and care is lessened. All male lambs should be castrated when from two to four weeks old, and all lambs docked. However, both operations should not be done at the same time, but with an interval of at least one week between.

Lambs should be given some palatable grain mixture and fine alfalfa hay or second crop clover when they are about two weeks old. The ewes and lambs should be turned out on pasture as soon as the grass springs up to such an extent that it will not be injured too severely by close cropping. The ewes should not need to be fed a concentrated feed while they are on pasture, but the lambs should have free access to some grain which will tempt their appetites. Oats, bran or corn meal will do very well for this purpose and will aid the growth and early development of the lamb. Lambs should be weaned at about four months and changed to fresh pasture. A good feed should be supplemented the pasture. Nowhere does the skill of the feeder show more plainly than in getting lambs on full feed without getting one off feed. The grain ration should be increased very slowly and several weeks should elapse before attaining full feed. Corn meal and alfalfa hay make a good ration. The feeding period need not extend over more than 100 days, and the gains in that time should be from 25 to 30 pounds per head. Some breeders hold lambs over winter and sell them as yearlings, but in this section we do not do this because the market seems to demand fat, plump lambs weighing less than 100 pounds.

C. C. C., Jr., Penn Laird, Va.—Possibly nothing on the farm has returned us better profits than sheep, so long as we can keep the dogs from them. Dogs are multiplying here and we were forced to go out of the sheep business, on account of our heavy losses from dogs. We found sheep would thrive on land so rough and grazing so short that other stock could scarcely pick a living therefrom. Sheep will eat and thrive on noxious weeds, keeping every nook and corner clean of such undesirable things. Furthermore, once eaten by a sheep, is forever destroyed, for nothing can pass through a sheep's stomach and ever germinate. We usually sold our lambs in late spring, invariably getting a handsome profit for the little work and expense of producing them. Our losses at lambing time were never large, owing to the fact that we provided the ewes with warm, dry, comfortable quarters and gave them a little extra feed, care and attention at this time. It costs so little more to have pure-bred sheep than scrubs that we kept pure-breds. After trying out many different breeds we settled down to the Southdowns, finding them, we thought, best suited to this country. As to wool, we always found a good market for it and in counting up the money after selling, felt that the wool alone, to say nothing about the profit from lambs, had handsomely paid us for the labor and expense of producing sheep.

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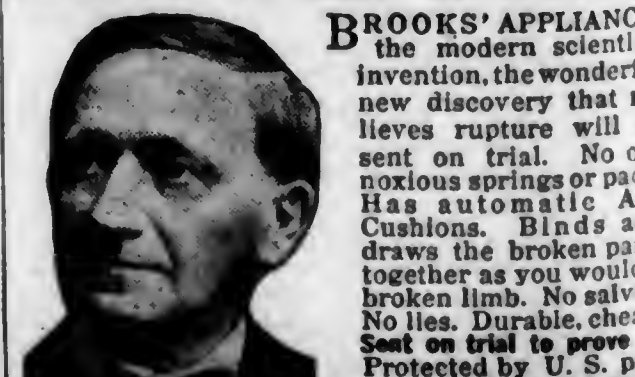


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The Practical Farmer

Live Stock and Dairy Section

EDITED BY W. H. TOMHAVE

"Sheeping Off" Corn

By GEO. H. DACY

With mutton and wool selling for top prices sheep at present are in the lime-light. In regions that are immune from the devastations of vagrant and mongrel dogs no branch of live stock will pay so well as sheep. This is particularly true in the case of rough, untillable land which is fairly well established in grass. As weed destroyers and soil enrichers sheep are almost matchless. Various lines of management are followed in handling sheep. Some farmers maintain pure strain breeding flocks and sell the progeny for foundation purposes. Others are specialized feeders, who buy animals in thin condition and fatten them for market. Many keep a few sheep as a farm side line to lend variety to the home meat supply, to keep down the weeds and filth and to produce an annual clip of wool and a crop of lambs which may be cash cropped.

One corn belt sheep feeder who handles 25,000 to 30,000 head per year makes a practice of buying sheep and lambs in thin condition in the spring of the year. He runs the sheep on blue grass and clover pasture during the summer and in the fall when the corn is showing signs of maturity he turns the sheep into the corn fields, where they are allowed to "sheep off" the corn crop. The sheep fatten rapidly consequent on this system of feeding, and generally under normal market conditions this feeder realizes an attractive net income from his "sheeping off" method of marketing his sheep.

A unique feature of these feeding operations is the fact that the feeder cannot raise enough corn to satisfy his large flocks. Consequently he has developed a system of buying the corn field surplus of his neighbors for sheep feeding purposes. The crop yield will be estimated by the two interested parties and the sheep man will pay his neighbor per acre about what the corn is worth. The plan is beneficial to both parties. The sheep feeder secures corn fields for "sheeping off" at reasonable prices, while the neighbors market their surplus corn crop at prevailing prices without the need of harvesting the crop, which is fed on the fields where it was produced. The farmers get the benefit of the sheep manure, while they have the stalks left on the field for plowing under purposes.

The sheep are only allowed access to the corn fields for an hour or so each day for about a week until they are accustomed to the feed. The owner of the corn crop looks after the sheep in this way and maintains the fences in good condition and sees that the sheep are supplied with plenty of clean drinking water and salt. The sheep waste but very little of the corn, and usually a few hogs are allowed to follow the sheep to handle this waste. The sheep are methodical in satisfying their hunger. They graze over the field uniformly instead of running helter skelter over the whole area, trampling and wasting the corn. Provisions are made

for fencing off small portions of the field at a time if the need for so doing arises, as indicated by the fact that the sheep show signs of wasting the corn. Temporary woven wire fences and sheep hurdles are used for this purpose.

On his home farm this sheepman always tries to grow his corn adjacent to a blue grass lot. In this way the sheep have access to a more balanced diet, as the corn supplies plenty of carbonaceous, fattening feed, while the clover and blue grass provide succulence and protein. As soon as a load of sheep are fat they are shipped to market and another lot of feeders substituted for them in harvesting the corn. This method is fol-

Silos on Eastern Farms

The silo on the farm is a modern invention, and there is probably no other building or piece of machinery that has been so well received or has filled such a want on the farm. Twenty-five years ago there were very few silos in the country and the silo was regarded as a novelty or a luxury. Today it is regarded as a necessity on the modern, up-to-date, live stock or general farm. Any man who has used a silo in his live stock work regards himself as being seriously handicapped if he must feed live stock without access to silage. In the early days the silo was regarded as being especially designed to meet the requirements of the dairy farmer. Such is no longer the case, however, as it is regard-

feed can be stored in a small amount of space. A larger amount of food nutrients can be stored in the same space in a silo than in any other type of building now in use on the farm. Hay, for instance, requires about three times as much space for the storage of the same amount of dry matter as silage.

THE KIND OF SILO TO BUILD.

In the selection of the type of silo to build it is like the selection of a breed of live stock. In that it becomes a matter of personal preference or choice. There is no best type of silo. There are a number of different types on the market today and all are giving good satisfaction if they are properly constructed. One type has one advantage, while another may have other advantages.

There are a number of general requirements of a silo necessary in the making of good silage. These may be enumerated as follows: 1. The silo must be airtight. Unless the walls are made tight the silage will not keep, as the oxygen will gain entrance to the material and fermentation will continue and mold will grow so as to spoil the silage around the walls, making it unsafe to feed to some classes of live stock. If the walls are made airtight and the material properly packed into the silo there is practically no danger of the material spoiling, with the exception of the top layer, which decomposes before the silo is opened for regular feeding.

2. The silo must be deep. It is highly essential that the silo have considerable depth in proportion to its width. Unless the silo is made deep it becomes necessary to put on weights to secure the necessary pressure to preserve the contents in good shape. When the silo is made deep the great pressure compacts all but the upper part, in which case the losses through fermentation are reduced to a minimum. In the case of deep silos the loss from spoiled silage on top is less in proportion to the amount stored than in the shallow silo. It is also possible to store a greater amount of material in a deep silo than in one that is shallow, as the greater pressure has a tendency to pack the lower contents more firmly.

3. The walls must be cylindrical in shape. In the early days silos were built rectangular in form and it was found exceedingly difficult to pack the mass in the corners so it would not spoil. Air-pockets would form in the settling of the silage and much of the material around the outside was spoiled. With the cylindrical walls there is no danger from this source if the material has been properly packed.

4. The silo must have smooth perpendicular walls. Smooth walls will allow the material to settle without forming pockets along the walls, and it will allow a uniform settling in all parts of the silo.

5. The walls must be rigid and well supported. There is a great deal of outward pressure in a silo when the material is settling, and unless the walls are well supported and rigid they are apt to spread and allow the liquid to escape



Making Mutton via the "Sheeping Off" Way

lowed until all the corn is exhausted, and usually about the time the corn gives out the last carload of sheep goes to market. These corn fed sheep have a record of topping the St. Louis market every year, and whenever they have been shipped to Kansas City they have brought a premium price. The feeder is an expert who possesses the ability to ripen a sheep to the top notch of market bloom so that the animal will weigh extra heavy at selling time. This method of fattening sheep via the corn field route is worthy of imitation in every sheep feeding locality where the market value of corn is not so excessive as to render it an expensive food for the production of nine to ten-cent mutton.

ADVANTAGES OF A SILO.

The use of the silo enables the farmer to preserve a large amount of material produced on the farm in a better condition than is possible by any other system of cropping. When corn or any crop suitable for silage is put into the silo there is only a small percentage of loss. This loss is estimated to range from 5 to 10 per cent, depending upon the condition of the silo and the crop when put into it. The loss from weathering of the average corn crop when left in the field and handled as field corn will range from 10 to 25 per cent, depending upon the length of time it is left in the field, and the weather.

The silo provides as nearly as possible summer conditions during the winter, which can only be had through the use of silage or root crops. Every farmer knows how well the live stock does on good pasture during the spring and summer months. This is due to the succulent grass which tones the system, especially where live stock has been wintered largely on dry feed. The feeding of silage keeps the system of the animal in a mild laxative condition and seems to aid in the digestion of other feeds.

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The Practical Farmer

Live Stock and Dairy Section

EDITED BY W. H. TOMHAVE

"Sheeping Off" Corn

By GEO. H. DACY

With mutton and wool selling for top prices sheep at present are in the limelight. In regions that are immune from the devastations of vagrant and mongrel dogs no branch of live stock will pay so well as sheep. This is particularly true in the case of rough, untillable land which is fairly well established in grass. As weed destroyers and soil enrichers sheep are almost matchless. Various lines of management are followed in handling sheep. Some farmers maintain pure strain breeding flocks and sell the progeny for foundation purposes. Others are specialized feeders, who buy animals in thin condition and fatten them for market. Many keep a few sheep as a farm side line to lend variety to the home meat supply, to keep down the weeds and filth and to produce an annual clip of wool and a crop of lambs which may be cash cropped.

One corn belt sheep feeder who handles 25,000 to 30,000 head per year makes a practice of buying sheep and lambs in thin condition in the spring of the year. He runs the sheep on blue grass and clover pasture during the summer and in the fall when the corn is showing signs of maturity he turns the sheep into the corn fields, where they are allowed to "sheep off" the corn crop. The sheep fatten rapidly consequent on this system of feeding, and generally under normal market conditions this feeder realizes an attractive net income from his "sheeping off" method of marketing his crop.

A unique feature of these feeding operations is the fact that the feeder cannot raise enough corn to satisfy his large flocks. Consequently he has developed a system of buying the corn field surplus of his neighbors for sheep feeding purposes. The crop yield will be estimated by the two interested parties and the sheep man will pay his neighbor per acre about what the corn is worth. The plan is beneficial to both parties. The sheep feeder secures corn fields for "sheeping off" at reasonable prices, while the neighbors market their surplus corn crop at prevailing prices without the need of harvesting the crop, which is fed on the fields where it was produced. The farmers get the benefit of the sheep manure, while they have the stalks left on the field for plowing under purposes.

The sheep are only allowed access to the corn fields for an hour or so each day for about a week until they are accustomed to the feed. The owner of the corn crop looks after the sheep in this way and maintains the fences in good condition and sees that the sheep are supplied with plenty of clean drinking water and salt. The sheep waste but very little of the corn, and usually a few hogs are allowed to follow the sheep to handle this waste. The sheep are methodical in satisfying their hunger. They graze over the field uniformly instead of running helter skelter over the whole area, trampling and wasting the corn. Provisions are made

Silos on Eastern Farms

The silo on the farm is a modern invention, and there is probably no other building or piece of machinery that has been so well received or has filled such a want on the farm. Twenty-five years ago there were very few silos in the country and the silo was regarded as a novelty or a luxury. Today it is regarded as a necessity on the modern, up-to-date, live stock or general farm. Any man who has used a silo in his live stock work regards himself as being seriously handicapped if he must feed live stock without access to silage. In the early days the silo was regarded as being especially designed to meet the requirements of the dairy farmer. Such is no longer the case, however, as it is regarded

can be stored in a small amount of space. A larger amount of food nutrients can be stored in the same space in a silo than in any other type of building now in use on the farm. Hay, for instance, requires about three times as much space for the storage of the same amount of dry matter as silage.

THE KIND OF SILO TO BUILD.

In the selection of the type of silo to build it is like the selection of a breed of live stock, in that it becomes a matter of personal preference or choice. There is no best type of silo. There are a number of different types on the market today and all are giving good satisfaction if they are properly constructed. One type has one advantage, while another may have other advantages.

There are a number of general requirements of a silo necessary in the making of good silage. These may be enumerated as follows: 1. The silo must be airtight. Unless the walls are made tight the silage will not keep, as the oxygen will gain entrance to the material and fermentation will continue and mold will grow so as to spoil the silage around the walls, making it unsafe to feed to some classes of live stock. If the walls are made airtight and the material properly packed into the silo there is practically no danger of the material spoiling, with the exception of the top layer, which decomposes before the silo is opened for regular feeding.

2. The silo must be deep. It is highly essential that the silo have considerable depth in proportion to its width. Unless the silo is made deep it becomes necessary to put on weights to secure the necessary pressure to preserve the contents in good shape. When the silo is made deep the great pressure compacts all but the upper part, in which case the losses through fermentation are reduced to a minimum. In the case of deep silos the loss from spoiled silage on top is less in proportion to the amount stored than in the shallow silo. It is also possible to store a greater amount of material in a deep silo than in one that is shallow, as the greater pressure has a tendency to pack the lower contents more firmly.

3. The walls must be cylindrical in shape. In the early days silos were built rectangular in form and it was found exceedingly difficult to pack the mass in the corners so it would not spoil. Airpockets would form in the settling of the silage and much of the material around the outside was spoiled. With the cylindrical walls there is no danger from this source if the material has been properly packed.

4. The silo must have smooth perpendicular walls. Smooth walls will allow the material to settle without forming pockets along the walls, and it will allow a uniform settling in all parts of the silo.

5. The walls must be rigid and well supported. There is a great deal of outward pressure in a silo when the material is settling, and unless the walls are well supported and rigid they are apt to spread and allow the liquid to escape



Making Mutton via the "Sheeping Off" Way

lowed until all the corn is exhausted, and usually about the time the corn gives out the last carload of sheep goes to market. These corn fed sheep have a record of topping the St. Louis market every year, and whenever they have been shipped to Kansas City they have brought a premium price. The feeder is an expert who possesses the ability to ripen a sheep to the top notch of market bloom so that the animal will weigh extra heavy at selling time. This method of fattening sheep via the corn field route is worthy of imitation in every sheep feeding locality where the market value of corn is not so excessive as to render it an expensive food for the production of nine to ten-cent mutton.

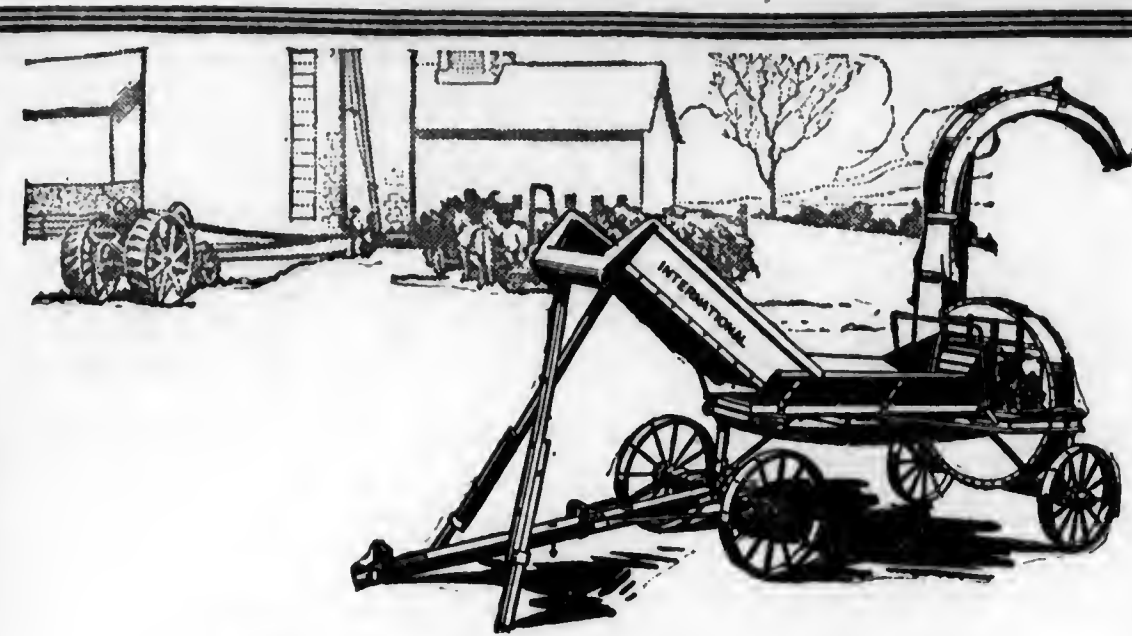
As equally essential for the production of beef and mutton.

ADVANTAGES OF A SILO.

The use of the silo enables the farmer to preserve a large amount of material produced on the farm in a better condition than is possible by any other system of cropping. When corn or any crop suitable for silage is put into the silo there is only a small percentage of loss. This loss is estimated to range from 5 to 10 per cent., depending upon the condition of the silo and the crop when put into it. The loss from weathering of the average corn crop when left in the field and handled as field corn will range from 10 to 25 per cent., depending upon the length of time it is left in the field, and the weather.

The silo provides as nearly as possible summer conditions during the winter, which can only be had through the use of silage or root crops. Every farmer knows how well the live stock does on good pasture during the spring and summer months. This is due to the succulent grass which tones the system, especially where live stock has been wintered largely on dry feed. The feeding of silage keeps the system of the animal in a mild laxative condition and seems to aid in the digestion of other feeds.

The feeding of silage is also a great convenience in that a large amount of

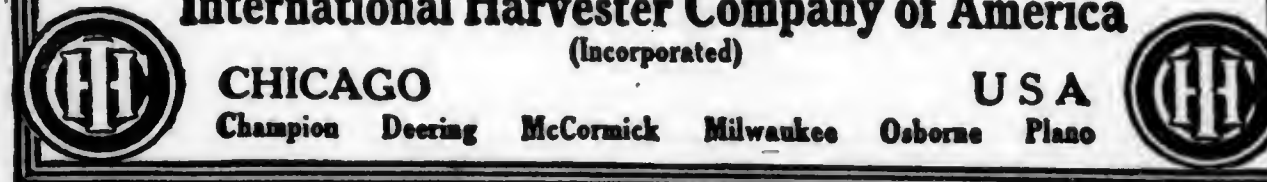


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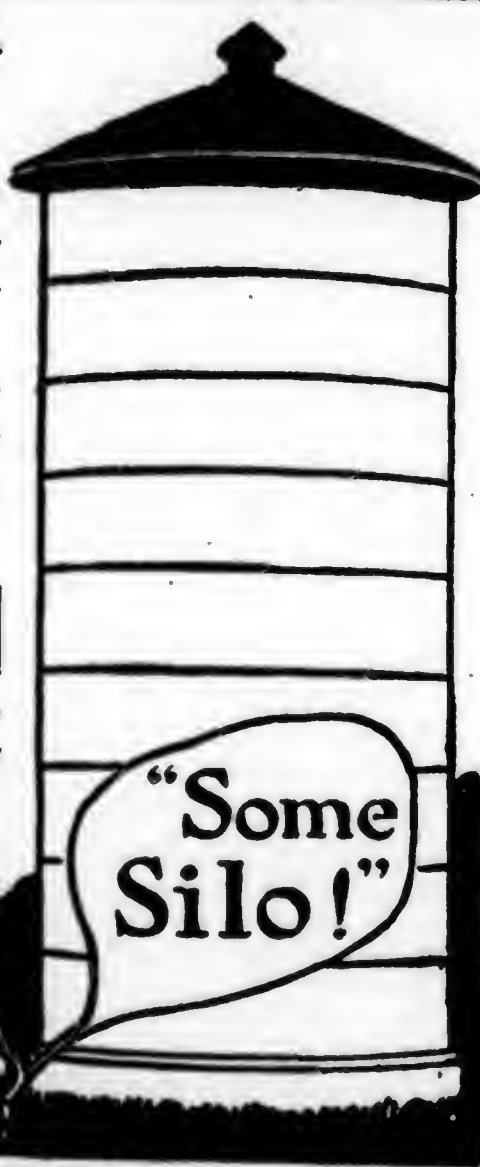
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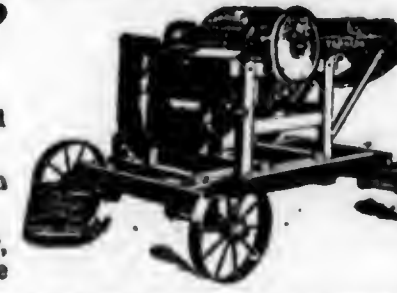
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and later cause the silage to spoil, causing losses that cannot be recovered.

6. Solid foundation. A solid foundation is essential in constructing a building of any kind, and it is no less essential in building a silo. This is especially true of silos built of the more permanent materials, such as hollow tile and concrete. More than one silo wall has cracked because of a weak foundation, and this has frequently been the cause of condemning a certain type of silo when the fault was not with the material used, but with the workmanship in construction.

TYPES OF SILOS.

Siilos are constructed of wood, solid concrete, cinder blocks, stone, brick, glazed tile, and sheet steel. The choice of these materials depends upon the locality in which the silo is to be constructed and the personal preferences of the builder. The distance to ship the raw material and the labor necessary in construction must be considered. These various forms of silos are all good and will give entire satisfaction if simple rules in construction are observed. The size of silo to build will depend upon the amount of live stock to be kept on the farm. It is always well to build it a little larger than is necessary to supply the immediate demands as the general tendency is to increase the amount of live stock after a silo has been built. It is also well to have a surplus capacity so as to store an extra supply of silage to provide for an emergency. In order to estimate the size of silo to build and the amount of silage necessary to provide winter feed, the following suggestions may be of value. A mature beef or dairy animal will consume from 30 to 50 lbs. of silage, daily, depending upon the amount of other feeds supplied. The average winter feeding period ranges from 140 to 180 days, so that from this data the amount consumed by one animal is readily computed. A reasonable allowance for sheep is from 2 to 3 lbs. per head, daily. The following table reported in Bulletin No. 100 of the Iowa Experiment Station will serve as a guide in determining the size of a silo to build.

CAPACITY OF ROUND SILOS

Inside Diameter	Height	Capacity Tons	Average to fill, 15 tons to the acre	Amount that should be fed daily Pounds
10	28	42	2.8	525
10	30	47	3.1	515
10	32	51	3.4	505
10	34	56	3.7	495
10	36	61	4.1	485
10	40	70	4.6	465
12	28	61	4.1	755
12	30	67	4.5	745
12	32	74	5.0	735
12	34	80	5.3	725
12	36	87	5.8	715
12	38	94	6.4	705
12	40	101	7.3	705
14	28	88	5.9	1030
14	30	91	6.1	1030
14	32	100	6.7	1020
14	34	109	7.2	1010
14	36	118	7.9	1000
14	38	128	8.5	1000
14	40	138	9.2	1000
16	28	108	7.2	1340
16	30	119	8.0	1340
16	32	131	8.7	1340
16	34	143	9.5	1340
16	36	155	10.3	1340
16	38	167	11.1	1340
16	40	180	12.0	1340
18	30	151	10.1	1700
18	32	166	11.1	1700
18	34	181	12.2	1700
18	36	196	13.2	1700
18	38	212	14.1	1700
18	40	229	15.26	1700
18	42	246	16.4	1700
18	44	264	17.6	1700
18	46	282	18.8	1700
20	30	187	12.5	2100
20	32	205	13.6	2100
20	34	224	15.0	2100
20	36	243	16.2	2100
20	38	261	17.5	2100
20	40	281	18.8	2100
20	42	300	20.1	2100
20	44	320	21.3	2100
20	46	340	22.6	2100
20	48	361	24.1	2100
20	50	382	25.5	2100

It gives the capacity in tons for the various sizes, the acreage of corn necessary to fill a silo of the various dimensions when 15 tons of corn are produced to the acre. Also, the amount that should be fed daily in order to keep the contents of the silo in good condition during the feeding period.

Lameness in Horses

J. H. REED, V. S.

(Continued from June 15th Issue)

SHOULDER LAMENESS.

Shoulder lameness in horses is not as common as many people think. By many, all obscure lamenesses in the forelegs are supposed to exist in the shoulder. At the same time, shoulder lameness is by no means uncommon. It exists in three forms: 1. Disease of the shoulder joint. 2. Sprain of the muscle that passes over the front of the joint (this muscle is principally tendinous; that is, it contains little flesh). 3. Sprain of the muscles of the shoulder blade, some of which are attached inferiorly to the point of the elbow, and some to the anterior and external surface of the arm. This lameness is usually called sweeney or shoulder slip.

Disease of the shoulder joint is not common. It may arise from strains, bruises or rheumatic affection. Inflammation is set up in the joint. The ligament (called the capsular ligament) that encloses the joint becomes thickened and distended with synovia (usually called joint oil). The articular cartilage (a cartilage that covers the articular surfaces of all bones that go to form true joints) becomes removed by ulceration, or, in rheumatic affection, converted into a porcellaneous deposit.

SYMPTOMS.—The horse is very lame. In all shoulder lamenesses the peculiarity of gait is, to a more or less marked degree, an indication of the seat of the trouble. The patient does not move the limb straight forward, but with a rotary motion, the foot being made to describe the segment of a circle. He fetches the leg forward with a somewhat sweeping motion, in some cases the foot being dragged or trailed forward along the ground; and he has difficulty in lifting the foot over any object, and is inclined to stub the toe and stumble. In shoulder or knee lameness the signs of pain are often more marked when the patient lifts his foot from the ground, while in disease below the knee pain is expressed when the foot comes in contact with the ground. Upon manipulating the joint pain, heat and swelling will be detected. In order to detect the swelling it is often necessary to press to one side a muscle that passes loosely over the joint. If the foot be lifted and drawn backward and forward the patient will evince pain, caused by the movement of the bones of the joint. In some cases the pain is so acute that it causes the patient to rear. It must be understood that uneasiness and symptoms of pain when these movements are performed are not of themselves sufficient grounds for diagnosis, as some horses are fidgety and will not tolerate such handling, but if there be the peculiarity of gait noted, along with pain, heat and swelling, we may conclude that the joint is the seat of trouble.

TREATMENT.—If properly treated in the early stages a perfect recovery is probable, but if change of structure, especially sloughing of the articular cartilage has taken place, the most favorable termination we can expect is a stiff joint, and as an animal with a stiff shoulder joint is practically useless, unless valuable for breeding purposes, it is better to destroy him. In the early stages rest in a comfortable box stall, accompanied by

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soothing applications, as bathing frequently with hot water and rubbing with an anodyne liniment (a good one is made of 2 ounces lanolin, 1 ounce acetate of lead, and water to make 1 pint) for a few days, until the acute inflammation is allayed, and following this by repeatedly blistering the parts, will in most cases effect a cure in the course of a few months. If the injury be severe a speedy cure cannot be effected.

SPRAIN OF THE FLEXOR BRACHII.

This muscle, as stated, is principally tendinous. It passes over the point of the joint in a double groove on the upper part of the bone of the arm, somewhat as a rope passes over a pulley. Both muscle and groove are covered with cartilage and enclosed in a synovial sheath. The function of the muscle is to raise the forearm and fetch it forward. Sprain is usually caused by the horse slipping and falling forward.

SYMPTOMS.—The peculiarity of gait is similar to that of shoulder joint lameness. There will be pain on pressure of the part, also heat and some swelling, but on account of the muscle being principally tendinous, the swelling is not well marked. If the foot be lifted and the leg carried backward, the patient will evince well marked pain, and if it be a severe case, he will rear off both forefeet. In most cases lameness increases on exercise. The result of sprain of this muscle is inflammation of the tendons and structure of the sheath that encloses them, which, if not arrested, will run on to ulceration of the cartilage and decay of the bone, and finally to ossification (conversion into bone) of the whole structure. The usual cause of this sprain is the horse stumbling and falling forward, with the feet backward. This puts great strain in the region of the shoulder joint, and the muscle under discussion is often severely stretched.

TREATMENT.—It is well to put a high-heeled shoe on the foot, as this enables the patient, while standing, to hold the diseased part in a state of comparative repose. Perfect rest must be given, and the same local treatment as for disease of the joint. It must be understood that in all cases where horses that have been working and highly fed are given rest, it is good practice to administer a purgative of 6 to 10 drams of aloes, according to size, and reduce the grain ration, or discontinue it entirely and feed on bran, hay and raw roots. In cases where pain is excessive and long continued, the patient may be noticed to fail in condition. He, under such circumstances, should be fed sufficient grain to keep up his condition. The third form of shoulder lameness, viz., shoulder slip or sweeney, will be discussed later.

(To be continued.)

The Place of the Dairy Cow on the Small Farm

(Continued from page 277)

yearlings and two weanlings that winter and sold one cow for \$75. Our profits should be higher this year, as we have sold two cows; will have another for sale this fall, and are only pasturing one yearling, against three last season.

We try to keep our work down to what we two can do, and with garden, small fruits and 300 hens, three or four cows are all we are able to handle. We like the Jerseys better than any other breed of dairy cattle for butter production, with Guernseys a close second. However, the Jerseys are so much more popular around here that the services of a good breeding sire are assured; then,

too, there is always a demand for Jersey cows, making sale of surplus stock so much easier. We have only one registered cow, but the rest are well bred grades, showing the main Jersey characteristics, all out of good cows, fine stock for breeding up. We will raise our heifer calves and breed to freshen at about two years; milk them the first year ourselves, and offer for sale with their second calves. We have found a very strong prejudice, especially among the big city dairymen, who are our best customers, against taking a young heifer. Some say they are too hard to break in to milk; some that they won't give milk enough the first year to pay for feed and care. If they don't they had better go right on to the butcher while they are young and tender, for they will never be profit makers. Then, too, the average heifer, bred from "civilized" stock, well treated and properly handled, needs very little "breaking." There are some that will always be hard to handle, and they will have to be sold at a discount for it. I am for "peace at any price" only in the cow yard; but my own disposition is not such that I can afford a cranky cow. Really, a nervous, irritable cow will play havoc even among normally quiet, contented beasts. One big reason for the discrimination against heifers is that in the big dairies the work must be done in a hurry and most of the milking is done by men. Milking machines are not very well liked around here, and most heifers' teats are small and hard to get at. Here at home I do most of the milking, and take plenty of time at it; my hands are smaller, and I always think there is more affinity between a cow and a woman, anyhow. I like the work, but have never yet had a really bad heifer to handle. The three we broke in this season are like old cows to stand. I would rather have a heifer any time than a cow, bought on the chance of having been carelessly handled formerly. Then it always pays to give your market what it demands. Our says cows, three or four years old, and are willing to pay for what they want.

We always had good calves until this year. The first cow freshened one bitter cold night in February and the calf calved to death before morning. One of the heifers lost hers at seven months and another of the cows tramped her calf to death. We have only one of this season's calves to raise, although with two cows yet to freshen, may have another. We only leave the calves on the cow until the milk is fit to use, and then make use of a good brand of prepared calf feed. We feed in whole milk the first two weeks, gradually changing to skim milk until at five to six weeks they are getting no whole milk at all. In feeding calves, as in making butter, the great thing is to be very careful and very clean in the care of their utensils. One feed in a sour bucket can undo the painstaking care of a month. Unless it is mild weather and the calf has the run of a grass lot, equal care must be taken that she gets no moldy or musty hay. A bad case of scours can give a really good calf a setback that lasts their lifetime. If scours develop, cut down on the feed, or sometimes a few feeds of whole milk make a cure. A raw egg stirred in the milk helps, as does a tablespoonful dose of castor oil. We like to keep the little ones tied up most of the time the first month or so, and think they are not nearly so hard to break to the halter later on.

In what I have written I do not mean to decry in any way the use of all the modern helps that can be afforded. On the small farm the brunt of the dairy work, all the most particular part; the

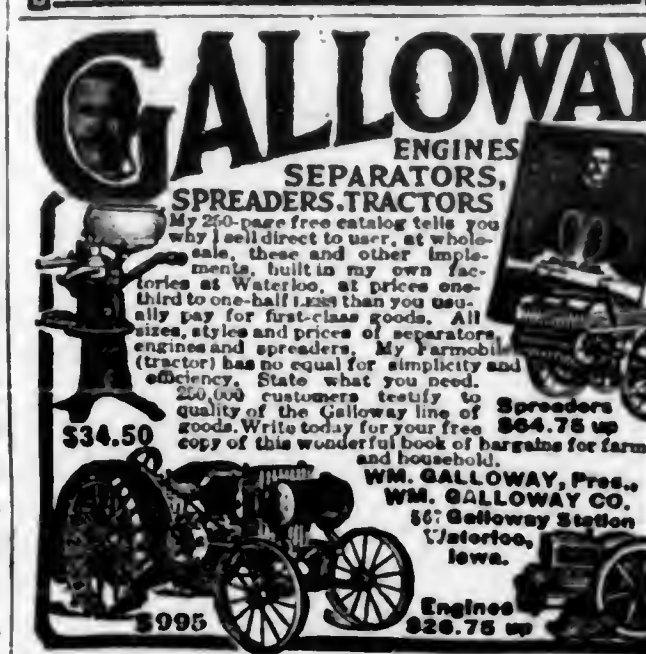


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endless cleaning and scrubbing; the ceaseless searching for foreign smells, falls on the housewife, many times already overburdened. Yet for many of us who simply must worry along with an old log barn and the very simplest of tools, it is just as possible, perhaps not quite so easy, to make a finished product we are proud to offer for sale. I have read lately, and promptly forgot, a lot of government statistics on the production of butter, and the amount of country butter that goes into the mixed tub of the huckster and never finds its legitimate market, leading one to believe the making of prime country butter a lost art. We hear nowadays quite a bit of talk on conservation of resources, yet the huckster who is really a non-producer, merely trading on the toil and capital of others can gather up tubful after tubful of butter—good, bad and awful bad all goes into the melting pot, to be sold back to the consumer as "renovated" butter. I don't know just how it is treated, but surely an article of food so delicately flavored as butter, if once allowed to absorb the foul odors and tastes of an open tub, can never be made fit for human consumption again. On nearly every farm these is a small surplus of dairy products to be sold, and after putting in time and hard work to make good butter, we should surely make the little extra effort to place it where we can obtain a fair price for it; where a really good article is appreciated. The hucksters get none of my butter. Not while the private trade in nearby towns is crying for it at 30 cents a pound even in the summer. Yet many a pound of really fine butter does go into the unspeakable mess in the hucksters' tubs.

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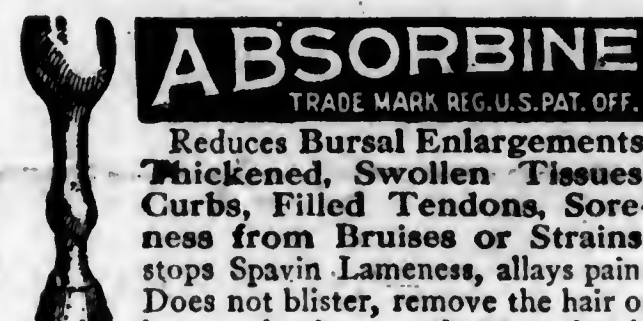
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Shepherd Puppies from best of stock, driving parents. Vates 3, Females 2. CORA KING, R. 1, Fairfield, Ill.

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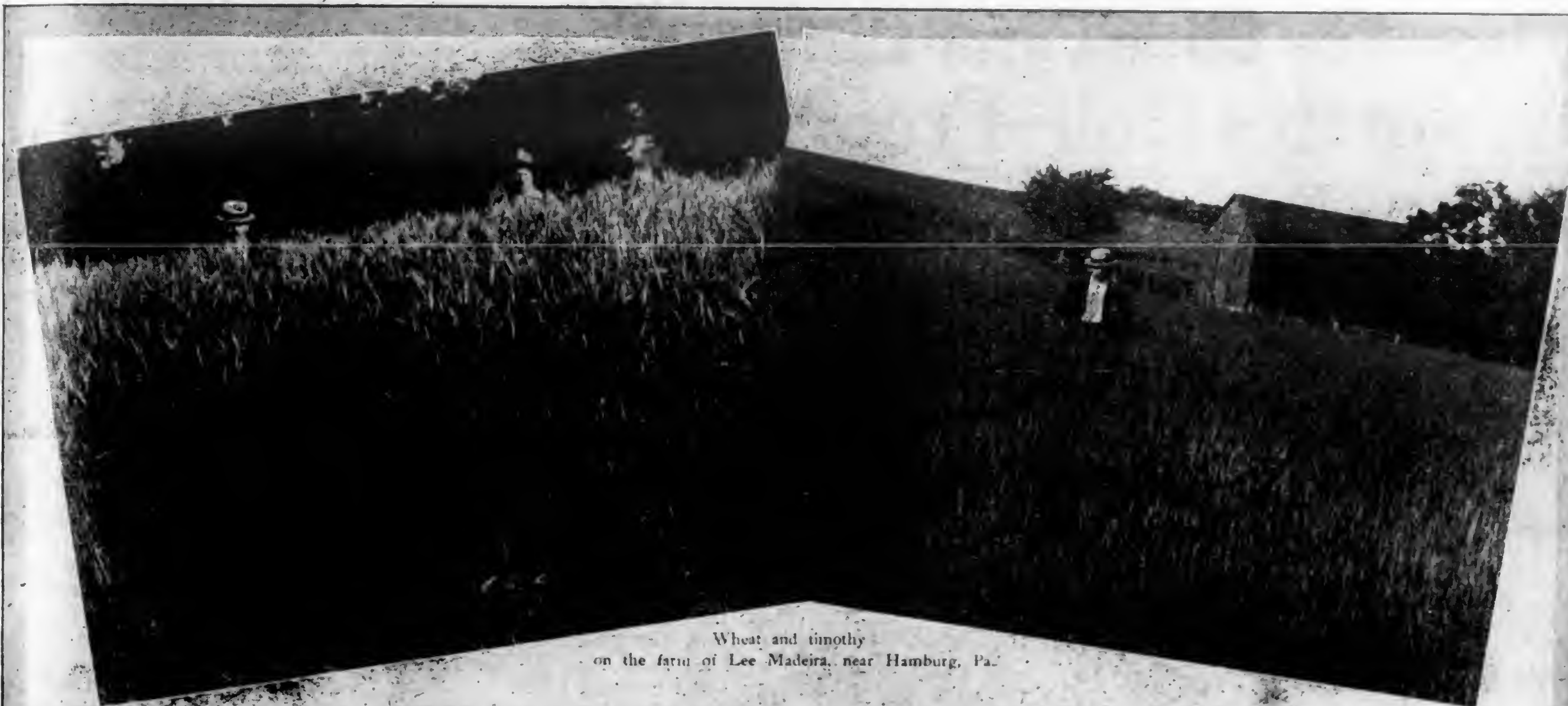
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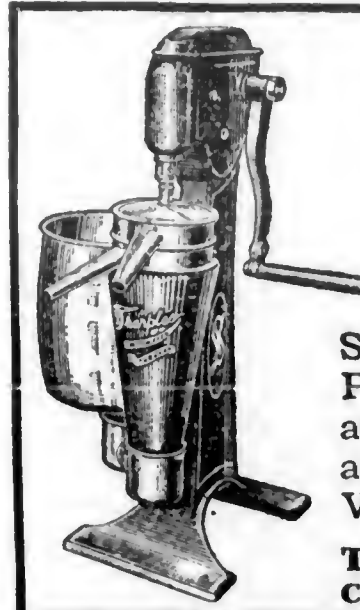
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From the description given in this letter I would surmise that the shoats are badly affected with intestinal worms.

Blindness and staggers are, as a general rule, associated with bad cases of intestinal worms. The correspondent does not state whether these pigs are closely confined and do not have access to pasture; you can expect more or less trouble of this kind.
I would advise putting the swine in a pasture lot and treating them with turpentine or a combination of arsenic, nuxtomine and calomel given in proportion to the live weight of hogs. The feed should be withheld for a period of 12 hours and the mixture given in the grain or slop. If turpentine is used the usual dose is a teaspoonful to 80 lbs. live weight. The turpentine is best given in milk where it will form an emulsion. This should be repeated every day for three consecutive days. In administering the other combination it should be given as follows: The powdered arsenic nut given at the rate of 1 grain per pound live weight of hog, nuxtomine 3 grains per 100 pounds live weight, and calomel 2 grains per 100 pounds of pig, and sodium bicarbonate ½ dram per pig. The former is the simpler of the two treatments for farm conditions.



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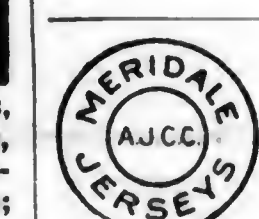
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Wheat and timothy on the farm of Clinton E. Gebner, Cresora, Pa.

Success with Everbearing Strawberries

M. GLEN KIRKPATRICK.

Any one with sound judgment would pronounce it the height of suspicion to look with distrust on a crop which brings in returns at the rate of \$1875 per acre the first year. And yet that is about the way Dr. J. A. Brown, of Ames, Iowa, feels about his everbearing strawberries which brought him returns of 25 cents per plant last year. At least Dr. Brown says he is suspicious of the crop. And yet, he has gone ahead and planted several thousand of the plants for this year's crop.

"My five hundred plants of Progressive everbearing strawberries produced five hundred quarts of berries, which sold for 25 cents per quart last season," says Dr. Brown. "I had fifteen hundred plants of Senator, the ordinary variety of berries, and they produced only six hundred quarts of berries which sold for 12½ cents per quart. At the rate my 500 everbearing plants produced, an acre would bring me returns of \$1875, while my Senator would produce only 3000 quarts per acre, and would sell for \$375."

When asked why he was planting so many of the everbearing plants when he claimed to be doubtful of the outcome of his extensive planting, Dr. Brown explained as follows: "I have always wanted to raise small fruits since I was a boy down in Louisiana county, and I always have wished somebody would make me quit fooling with medicine. Now that I am rid of my practice, I am going to do just what I have wanted to do. I am seventy years old, but I always feel well when I am working, and I wouldn't feel satisfied to quit working now, although it is a great deal more cheerful to work when there is some money along with it."

In planting the everbearing strawberries, the plants have been set 18 inches apart in rows 3½ feet apart. The soil was well fertilized with stable manure before the plants were set. After the soil had been made quite fine, the plants were put into the ground by hand. The plants were given clean cultivation all last season. No fruit was allowed to set until after the middle of July, since all the energy of the plants up to that time was needed in producing the runners for new plants. These runners were allowed to grow fast and form a matted row of plants, while a strip between the rows about 18 inches wide was kept free from plants, making a space to be used as a walk, and at the same time being a means of renewing the rows. A part of the mulch which was placed on the plants last fall to protect them from cold weather, was left on the rows this spring. This straw litter will aid in keeping the berries clean this summer. The mulch which is removed is being raked back between the rows and will help to keep down the weeds, as well as conserving the moisture.

On his little farm in the edge of Ames, Dr. Brown has given practically all of his land to the raising of small fruits. When he purchased this little farm of several acres a few years ago, it had been cropped almost to death. It took load after load of manure from livery stables in town to coax the land back to life. The farm is planted to everbearing raspberries, blackberries and strawberries. There will be more than an acre of strawberries bearing fruit this season. Eventually the whole farm will be planted to strawberries, for Dr. Brown has found them to be a more profitable crop than any of the other small fruits.

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"My worst trouble has been blue grass and white clover," says Dr. Brown. "It came from the manure which was hauled in from the stables. I thought the ground moles were doing a lot of damage when they burrowed along under the plants, and I trapped a couple of them, but I believe they did more good than harm, for they seemed to keep the white grubs in check. "I lost a few plants from drought, and that is one reason I am a little suspicious of the everbearing strawberries," continues Dr. Brown. "They produce their fruit in the driest part of the summer. By irrigation, as they are doing in a great many cases, this can probably be overcome."

As a home garden crop, Dr. Brown is very enthusiastic over everbearing strawberries. "Everybody who has a home ought to have a few of the plants, to have fruit all through the season. I do not know whether it will pay me on the large scale on which I have undertaken it or not, but I am going to see what there is in it. At the same time, I'll feel better for keeping at work."

An important advantage of the penetration road is that the method may be applied to the thousands of miles of stone roads which traverse rural districts, but on which traffic is not so heavy and excessive as to warrant the building of the most costly types of highways. It would also mean the transformation of stone roads into thoroughfares so durable that present high maintenance charges would be eliminated. The method is rapid and simple, obviating the necessity for costly equipment and complicated mechanical processes.

That the penetration method is far beyond the experimental stage is shown by its successful use in many states. For example, Park Heights avenue, near Baltimore, a road subjected to constant stress from all types of traffic, was built by the penetration method in 1910, and up to date has cost practically nothing for maintenance. Merrick Road, Long Island, is another notable example of successful construction of this type. This road, also, was built in 1910. Like satisfactory results have been obtained in Indiana, Florida, Massachusetts, Ohio and other states, showing that the penetration roads with natural asphalt binder will stand up under the most varied climatic conditions, as well as under severe traffic test.

To Save Macadam Roads

The good old macadam road, the thoroughfare that served admirably all traffic requirements in the past, has in recent years been made the "goat" of modern highway construction through constant comparison of its high maintenance with that of newer types of roads. It is true that maintenance on macadam roads subjected to motor traffic has become practically prohibitive, but these old and thoroughly compact roadbeds of stone have a pronounced economic value when properly utilized.

The binding material of the macadam road, the rock-dust ground down by steel tires and iron-shod hoofs under horse traffic is sucked out and dispersed by the rapidly revolving rubber tires of the motor car, and the stones, upon exposure, are ripped out and cast aside. But this failure need not necessitate the building of entirely new and costly roads of other types, such as has been the practice in some communities.

Engineering science has discovered that it is entirely feasible to transform an old macadam or turnpike road into a durable and satisfactory highway by substituting for unstable rock-dust a tenacious and permanent binding material. This restoration is accomplished at low cost by what is known as the asphalt penetration method, the asphalt acting as the binding agent. Thus treated macadam roads enter the permanent class. They possess low tractive resistance, are not transformed into mud or dust and require but very little outlay for maintenance. The elimination of maintenance is, after all, the important economic consideration, for it is well understood that excessive outlay for repairs has been the most pronounced factor in retarding highway improvement throughout rural districts.

To transform an old stone road into a permanent road by the penetration method is not expensive. All that a county or township needs in the way of equipment are melting kettles, a distributing wagon or pouring pots, and a roller. Assuming that the old road has been shaped up or brought to proper contour, there is spread upon it a 2 or 3-inch layer of stone. The melted asphalt is then poured over the road until it penetrates every recess, thus filling all voids and interstices with the durable binding material. This is followed by thorough rolling and in some cases a top or seal coat of fine screenings is added. The result will be a durable highway costing little, if any, in excess of a well-built water-bound macadam road. But this method of treating macadam roads requires that a genuine or natural asphalt be used as distinguished from the manufactured product consisting of the residual pitch sold as a by-product of the oil refineries. Natural asphalt has had centuries of seasoning in great lake-like deposits. A very high percentage of the ductility of the manufactured product is destroyed when heated and mixed with sand and stone, whereas the natural product retains its ductility and tenacity. So important is this distinction regarded by German scientists that in official nomenclature it is not permitted to apply the term asphalt to residuums of petroleum.

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The agricultural industry is the only large industry in existence that is unorganized, and as a result it naturally falls prey to those who traffic in its productions. It is very evident that farm methods are improving and the farmer is a better producer than he was years ago, but it is also evident that much of the advantage he has gained through education, applied science, government aid, better equipment, and more intelligent practice, has been altogether lost because he has not been able to dispose of his products or buy supplies and equipment advantageously.

In some countries the results of co-operative business methods are marvelous. Denmark and Ireland have become rich and world famous and the farmers there have made remarkable progress, simply because they have learned to sell their products in a business-like way and buy their agricultural requirements together. They give their attention to production, but they also see to it that their products are sold intelligently by their own representatives. The farmer cannot learn everything about marketing and distribution, but a hundred farmers can hire a marketing expert to handle their products and can afford to pay him a good salary out of the increased returns that would otherwise go to the middlemen.

A TWICE-A-MONTH JOURNAL of practical, every-day experience for, and by, men and women who take their living from the soil.

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Number 15

Solving the Marketing Problem

By GEO. HILDEBRAND

Sec'y N. Y. State Dept. of Foods and Markets

EFFICIENCY is the basis of modern business success. Without it no business is worthy of the name; with it all things are possible. Efficiency in marketing is absolutely essential to the proper distribution of farm products. Organization and co-operation among farmers and producers has proven to be the most efficient method of distribution and one which will insure the best conditions and the greatest prosperity to the producers. A growers' mutual marketing and purchasing agency, operated on a strictly co-operative basis will promote the general advancement of the producers' interests:

(a) By securing better transportation facilities, which will make distribution of farm products more expeditious and economical.

(b) By scientific marketing of farm products, which will open up and develop new markets and secure better returns.

(c) By standardizing the packing and installing uniform packages.

(d) By obtaining an improved system of market reports, which will enable the grower to know the exact situation in regard to distribution and markets.

(e) By the co-operative purchase of supplies, such as packages, equipment, seeds, grains, fertilizers, spray materials, spray outfits, etc.

The agricultural industry is the only large industry in existence that is unorganized, and as a result it naturally falls prey to those who traffic in its productions. It is very evident that farm methods are improving and the farmer is a better producer than he was years ago, but it is also evident that much of the advantage he has gained through education, applied science, government aid, better equipment, and more intelligent practice, has been altogether lost because he has not been able to dispose of his products or buy supplies and equipment advantageously.

In some countries the results of co-operative business methods are marvelous. Denmark and Ireland have become rich and world famous and the farmers there have made remarkable progress, simply because they have learned to sell their products in a business-like way and buy their agricultural requirements together. They give their attention to production, but they also see to it that their products are sold intelligently by their own representatives. The farmer cannot learn everything about marketing and distribution, but a hundred farmers can hire a marketing expert to handle their products and can afford to pay him a good salary out of the increased returns that would otherwise go to the middlemen.

Our markets here demand two or three simple things of the producer: Dependable goods, packed uniformly and neatly, well graded, shipped regularly in sufficient quantities to meet the demand. They can hardly be supplied by the individual farmer, and because they cannot be supplied in that way, the market man and consumer naturally go to the jobber to get their goods. The jobber pays the farmer as small a price as he can, and charges the consumer as much as he can. A well established co-operative association can successfully obtain a higher price for the farmers' products, a cheaper charge for transportation by

assembling car-lot shipments, more dependable and wider markets, consequently an increased consumption, which all mean prosperity, and with this the consumer has been able to obtain a standard product of dependable grade at a price not exceeding that which he paid for a poorly graded product and unreliable in quality.

There are several essentials to successful co-operation. The first is sufficient material in any community with which to carry on a co-operative business. It is useless to co-operate in the formation of any association if there is not a sufficient supply of one or a few varieties of products to make an organization worth while. It is advantageous to have the co-operating area within a small district. It is much easier for a number of farmers in a small community to organize for purposes of purchase or sale than it is for the farmers scattered over a few counties to organize. It would be well to consider the growing

the investment. A co-operative association should be democratic and the one-man-one-vote principle will keep it democratic. A co-operative association should be a union of individuals and not shares. Each member, regardless of his contribution to the capital of the association, should have a right to one vote concerning the policies of the society.

There are many co-operative organizations in the United States that are organized for both selling and purchasing, but the most successful societies are those that are organized either for buying or for selling only. A co-operative society should be organized to sell fruits or vegetables, or to buy feeds, fertilizers and other agricultural requirements, and if these same farmers desire to co-operate with others for some other purpose, they should form a second association. The underlying reasoning here is simply that if the farmers have a single aim, it is much more easy for them to do business where their interests are in common.

All co-operative companies should be incorporated. Many states have a law providing especially for the incorporation of such societies.

Under this law each member has one vote irrespective of the number of shares he holds. A nominal dividend of about 6 per cent. is paid on the stock, provision is made for the accumulation of a suitable surplus beyond which the main portion of any further surplus is paid back to the patron as a trade dividend. This arrangement prevents control by a few members, and the making of a profit by one member out of the business of another.

No organization is automatic or will run itself. A co-operative society cannot be as well managed by a board of directors as an ordinary business can, because every man in a co-operative association is interested in the work of his association and every man thinks he knows as much about running the society as every other man, sometimes a little bit more. The management of the company should, in general, lie with a board of directors. However, the details of management should rest with a manager, who should be thoroughly competent and trustworthy. Bad management and unbusiness-like methods have been the chief reasons for failures in co-operative work. The affairs of the society should at all times be open and public to its members. Accurate records and accounts are essential. Many failures have been traced directly to the lack of proper accounting system. The very life of a co-operative organization depends upon the confidence of its members and on their knowledge that the affairs of the organization are conducted in a business-like manner and that the records have been accurately kept.

Producers' associations must have capital the same as any other business organization, but in many instances farmers have gone into business co-operatively with inadequate capital, and after they have made a start with too little capital, it is exceedingly difficult to increase the amount, since the situation under these circumstances is generally a discouraging one. Therefore, it is advisable to properly finance the project at the beginning. This will eliminate a great

(Continued on page 303)

Does Any Little Farm Girl Want this Doll—Free?



This is "Little Miss Prim." She is a beautiful paper doll, just a foot high, and she has four hats and four dresses—four changes of costume, all in the most exquisite taste and coloring—masterpieces of the lithographer's art. All children love dolls that they can dress and re-dress.

Here is the prettiest paper doll you've ever seen, "Little Miss Prim" is made of fine, stiff cardboard and her body is fitted with a stand, so that she can be stood upright. Both she and her hats and dresses are all cut out—all ready to play with—no work for parents at all—and any child from 3 years up, can easily put them together.

I am ready to give one of these beautiful dolls to any little farm girl free, so long as my supply lasts, in return for a few minutes of her time—and practically no work.

Just fill out this coupon and mail it to me today and I will tell you how you can earn "Little Miss Prim" for your own. Do it now for I can't get more of these dolls when the supply I have now is gone.

M. D. GORE,

P. O. Box 1321, Phila., Pa.

I am a little farm girl and I want "Little Miss Prim." How can I get her?

(Write your name here plainly)

(and address below)

P. O.

R. F. D. State

M. D. GORE

P. O. Box 1321, Philadelphia, Pa.

The Practical Farmer

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AUGUST 1, 1916

A Rural Credits Law at Last

ON July 17th the President of the United States signed, in the presence of representatives of a number of the foremost farmers' organizations of the country, the Federal Farm Loan Act. For fifteen years a fight, conducted by farmers' organizations and others interested in agricultural progress, has been waged for a law of this sort.

While, of course, the Act as it stands, is a target of considerable criticism, and many are pessimistic as to its real value, in its present form, to the farmers, it must be remembered that any radical departure in the way of new legislation is an experiment and is subject to amendment as a result of experience. Accordingly, while the new law may have many faults and require many improvements which will only be possible of determination when it has been in force for a little time, it is certainly a step in the right direction and a move looking toward progress in agricultural interests.

The Act as signed by the President provides for the creation of twelve Federal Land Banks, distributed conveniently throughout the country, which are empowered to lend money on first mortgages on farm lands in amounts of from \$100 to \$10,000 at reasonable rates of interest. No loan may be made for more than 50 per cent. of the value of the land mortgaged and 20 per cent. of the value of the insured improvements. Mortgages are allowed for periods of from five to forty years, but small annual or semi-annual payments on principle are required. Local organizations, composed exclusively of borrowers, under the title of National Farm Loan Associations, are authorized by the Act, but these associations must be stockholders in the land banks in proportion to the amount their members wish to borrow. The land banks are really co-operative stock companies in which all the borrowers, becoming stockholders, will share in the profits. A Federal Farm Loan Board in the Treasury Department will control the Land Banks; this Board is composed of the Secretary of the Treasury, as chairman ex-officio, and four members to be appointed by the President.

The Act specifically defines the purposes for which loans may be obtained. These are:

- (a) To provide for the purchase of land for agricultural uses.
- (b) To provide for the purchase of equipment, fertilizers and live stock necessary for the proper and reasonable operation of the mortgaged farm; the term 'equipment' to be defined by the Federal Farm Loan Board.
- (c) To provide buildings and for the improvement of farm lands; the term 'improvement' to be defined by the Federal Farm Loan Board.
- (d) To liquidate indebtedness of the owner of the

land mortgaged, existing at the time of the organization of the first national farm loan association established in or for the county in which the land mortgaged is situated, or indebtedness subsequently incurred for one of the purposes mentioned in this section."

The Tariff Question Again

THE bill to provide for a tariff commission was tacked on to the income tax bill, passed the House of Representatives as a part of that measure, and is now before the Senate. The bill creates a commission with full powers to investigate the whole tariff question, in all its relations to our trade with foreign countries, and also its effects upon the United States.

It is intended as a permanent institution, to be composed of six persons, the first appointees to be for two, four, six, eight, ten, and twelve years, and thereafter each member to be appointed for a term of twelve years. The original salaries of \$10,000 each were reduced to \$7,500 in the House.

The commission is required to report annually to the President, and to the committees on finance, and ways and means, in regard to the investigations which it has made.

It is time that the tariff question was taken up in a practical way and in such shape that Congress can act intelligently upon it. But it doesn't seem to us that this commission will accomplish that much to be desired result. In the Taft administration a commission was appointed for that purpose, and its findings were duly reported to Congress and promptly pigeon-holed, and as far as we know was never taken out when the Underwood tariff was framed.

A commission that would be given the power to make a full investigation of the tariff question and then formulate their conclusions into a tariff bill and report the same to Congress, giving the bill the same status that a bill reported from a committee of Congress would have, might receive some consideration. We doubt if any other report would. It would probably find its last resting place in a pigeon hole, as did the report of the Taft commission.

A bill, the result of such an investigation and framed in accordance with its conclusions, would be far better than a crazy quilt law framed along partisan lines, as any bill which originated in Congress itself would be.

Good Sense on the Road Question

IT is not very often that a metropolitan daily newspaper strikes the right idea on the good roads question. For that reason the following excerpt from a recent issue of The Public Ledger, of Philadelphia, is noteworthy:

"It is high time for this vastly rich commonwealth to end a condition that is an open scandal among farmers and motorists in rural districts. Some of the state roads are for long distances excellent beyond cavil. But many of the connecting links between hard and smooth surfaces are execrable, leading to losses and delays that cost far more than the necessary repairs. There is no excuse for sloughs and deep ruts along the highway in such settled areas as those of Chester county, where good roads to market may spell for the agriculturist the difference between failure and a paying venture. A completely satisfactory road-building policy mends the byways as well as keeping a few trunk lines in prime condition."

The last sentence is the "nub" of the whole question. Expending either national or state appropriations on the building of costly highways between large cities is not exactly throwing away money, but it is getting the least good for the expenditure, and using it where it will benefit the few at the expense of the many. As a rule, the metropolitan press labors under the idea that large cities are the "whole shooting match." But while "man made the cities, God made the country." And the country is the real basis upon which the building, growth and prosperity of the cities depend.

When the country roads are put in passable condition for travel at all seasons of the year, and so maintained, then the trunk highways should come in for their share. Commence at the bottom of the good roads pyramid and build up.

Putting on the Screws

THE new income tax bill has passed the House of Representatives with a rush. While it is probable that it will pass the Senate in substantially the same form, there will be a larger expenditure of words than there was in the House.

The bill makes a drastic increase in the rates over those which now prevail. The exemption of \$4000 for married men and \$3000 for single men is not altered. The rate on incomes of \$20,000 and less is doubled, being 2 per cent. On incomes from \$20,000 to \$40,000 1 per cent. additional; between \$40,000 and \$60,000, 2 per cent.; between \$60,000 and \$80,000, 3 per cent.; between \$80,000 and \$100,000, 4 per cent.; between \$100,000 and \$150,000, 5 per cent.; between \$150,000 and \$200,000, 6 per cent.; between \$200,000 and \$250,000, 7 per cent.; between \$250,000 and \$300,000, 8 per cent.; between \$300,000 and \$500,000, 9 per cent.; and over \$500,000, 10 per cent.

An inheritance tax is also provided for on all estates over \$50,000. On estates which net \$50,000 to \$150,000, 2 per cent.; between \$150,000 and \$200,000, 3 per cent.; between \$200,000 and \$400,000, 4 per cent.; and 5 per cent. on all estates over \$500,000.

War munition products are also to be taxed, running from 2 per cent. to 8 per cent. on the gross receipts of \$250,000 and over.

These three different taxes are expected to produce \$250,000,000 over the amount now realized from the present income tax law.

Of course, there is a vigorous kick coming from those who will be affected by this large increase in the amount of the tax they will have to pay to Uncle Sam. Some of the newspapers claim that the tax will finally be passed along to the poorer classes, to where already a large proportion of taxes, local, state and national does actually sift down.

But we think that a smaller proportion of an income tax and an inheritance tax can thus be shouldered off on those least able to bear it than is possible under any other tax that can be levied. A study of how taxes are handed down from the top until they reach the bottom—the laboring people—will show that a tax levied on incomes above three or four thousand dollars a year cannot be so readily passed along as are other taxes.

Anyway it is well to give it a trial.

Bulletin Helps for Farmers

Pennsylvania State College School of Agriculture and Experiment Station has recently issued a bulletin (Extension Circular No. 47) on "Farm Poultry," by F. D. Crooks. The pamphlet gives a lot of valuable information in regard to poultry in Pennsylvania and treats on breeds, breeding, incubation, feeding, care of growing stock, houses and housing, marketing, etc. It is, of course, free for the asking.

In the United States Department of Agriculture Series of "Farmers' Bulletins" three recent numbers are worthy of note:

No. 715, "Measuring and Marketing Woodlot Products;" this is one of a number of bulletins which the Department has issued regarding the farm woodlot, aiming to encourage the proper care and preservation of this rapidly decreasing portion of the good old-time farm; farm woodlots are valuable and this bulletin, with others of the same series, will help farmers to appreciate their value and more intelligently care for them.

No. 740, "House Ants: Kinds and Methods of Control." Many a farmer's wife will find much help in ridding her home of a particularly persistent pest in this bulletin; it gives a lot of little known information regarding ants and methods for their destruction.

No. 746, "The Farmer's Income." A very interesting and instructive little pamphlet in which the farmer's income is compared with that of other classes of workers; some of the information is startling and all of it is intensely interesting; a study of it will give any farmer much food for thought.

Any and all of the above bulletins are, of course, free on receipt of a postal card request addressed to the U. S. Dept. of Agriculture, Washington, D. C.

"Common Diseases of Beans" are described and recommendations made for their control, by Dr. M. T. Cook, in Circular No. 50 recently issued by the New Jersey Agricultural Experiment Station, New Brunswick, N. J. The loss, due to fungous diseases, is heavy and has troubled many farmers in New Jersey and Pennsylvania. The circular is free for the asking.

Electricity on the Farm

By ALFRED E. WALLER

(The first of three articles concerning the uses of electricity—and especially electric lighting—on the farm. The next article will appear in our September 1st issue.)

It is human nature to assume that a new idea is more or less of a joke until it is shown to be otherwise, and there is no doubt whatever that some perfectly sound ideas have been brought to light in such curious fashions, by such curious people that they have remained a joke longer than they should have. Darius Green and his flying machine furnished amusement for several generations, and in the years when the first automobiles were made, the joke writers and comic artists fairly paid their rent by poking fun at automobiles and their owners. But, in spite of it all, the motor car and the aeroplane have come to stay, and to prove that a new idea is not a joke, when it is a right idea.

So with electricity on the farm. The funny men have had a fine time drawing pictures of a farmer lying back in an easy chair and pressing buttons connected through coils of wire to automatic devices of uncertain design which were shown violently chopping wood, stacking hay or milking a cow with a most distressed expression, surrounded by a halo of forked lightning. The artist and joke writers have had their fun, and we have all enjoyed laughing with them, but now it is time to get down to business. Electricity has come to stay on the farm and the sooner every farmer puts it to work the better for his farm and for himself. Electricity saves time, and trouble, and makes life easier in many ways.

If we sort out the different kinds of work which have to be done on a farm, it becomes evident at once that a great many small but important items can be readily disposed of by means of small electric motors. The motor-driven cream separator works without any one to watch it; motor-driven bottle brushes, buffing wheels and tool grinders all shorten and lighten the day's work. Electric light, which is always steady, bright and perfectly safe, is the most valuable sort of aid in all work carried on in dark places or after daylight hours. Electric hot plates, percolators, fans, vacuum cleaners and washing machines all help to do away with the drudgery of housekeeping, and to make the farm home more attractive. All these devices, and a great many more, may be easily operated from an inexpensive plant, which requires no technical knowledge or special training to operate, and runs with very low cost for maintenance.

First of all, electricity has to be made, or generated, by means of a dynamo. The dynamo is a machine which converts energy, or horse power, if you like, into electricity. The dynamo will generate electricity only while power is used to keep its armature, or moving part, in motion. As soon as the armature stops the dynamo ceases to generate electric current. While it is in motion, the electricity may be used for lights, for running motors, or charging a storage battery. It does not matter whether a gas engine or a water wheel, a treadmill or a windmill is used to drive the dynamo—as long as the driving power is enough to keep the armature spinning at the proper speed the dynamo will convert the power to electricity. It becomes evident, therefore, that some means for storing electricity must be provided, unless we want to keep the dynamo running all the time. For this purpose a storage battery is used. The electricity generated by the dynamo may be allowed to accumulate in a storage battery, and

the supply may be drawn upon afterward at any desired rate. With a battery and dynamo of proper capacity, enough electricity may be generated and stored in a few hours to supply the farmer's household for two weeks, or longer if desired.

A typical storage battery, such as is supplied with a farm lighting system, is shown in Fig. 1. It is a group of water-

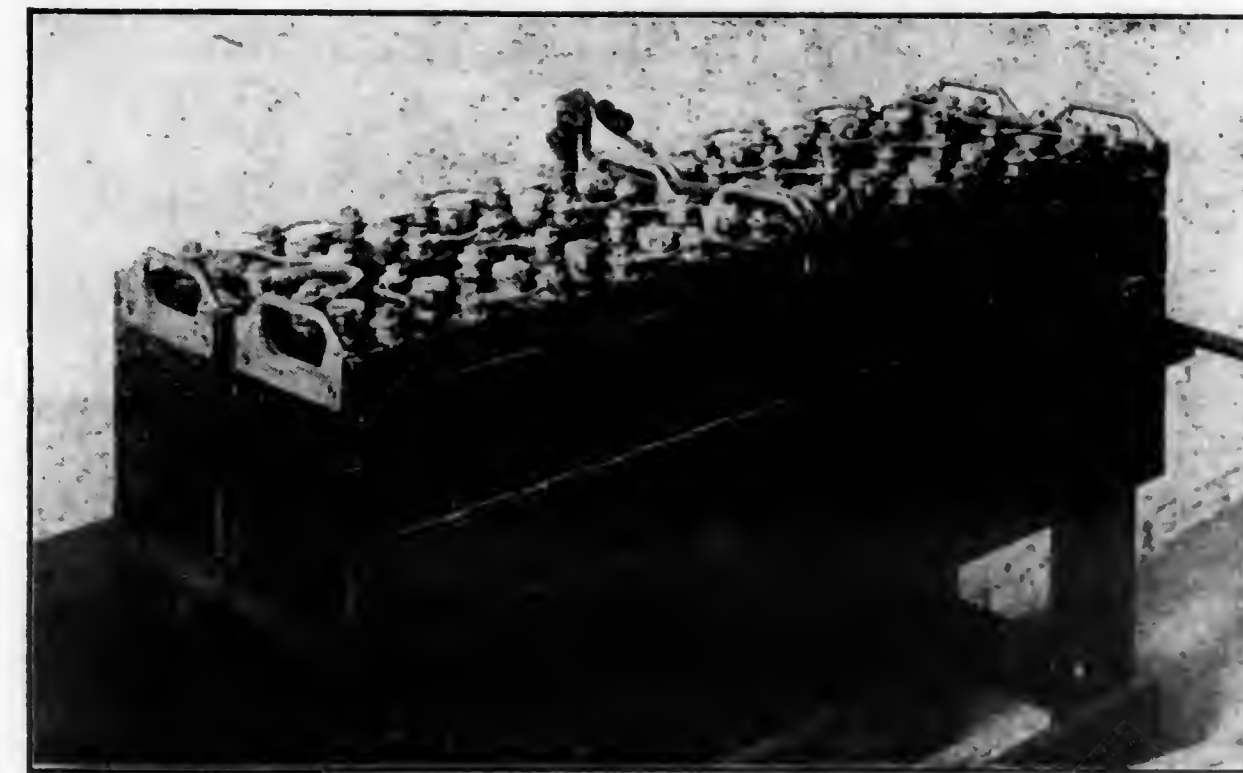


Fig. 1

tight steel cans filled with an alkaline solution, in which specially prepared plates are suspended. There is no electricity in a battery of this kind until it has been charged by means of a dynamo like that shown in Fig. 2. The dynamo is on the floor at the extreme left of the picture and is belt-driven from the engine at the right-hand side. Wires are run from the dynamo to the storage battery, which is shown on a shelf behind the engine.

The amount of electricity which may be stored in a battery depends upon its size and capacity. It is a good deal like pumping water into a storage tank; the bigger the tank, the more water it will hold. Electricity is measured in "amperes,"

requirement as to capacity, but are also designed to furnish electricity at the pressure best suited to the service. The pressure of electricity is a good deal like water pressure, and, if the power is to be transmitted a long distance, a battery of higher pressure is needed than would be necessary for a short distance only. The electric wires used to conduct electricity to the points where it is used offer a certain amount of resistance to it, just as water pipes do to the water they convey. For small installations, where little or no motor load

is required, and most of the lights are comparatively near the battery, a pressure of 30 volts is commonly used. For higher pressure a 110-volt battery is

Fig. 3

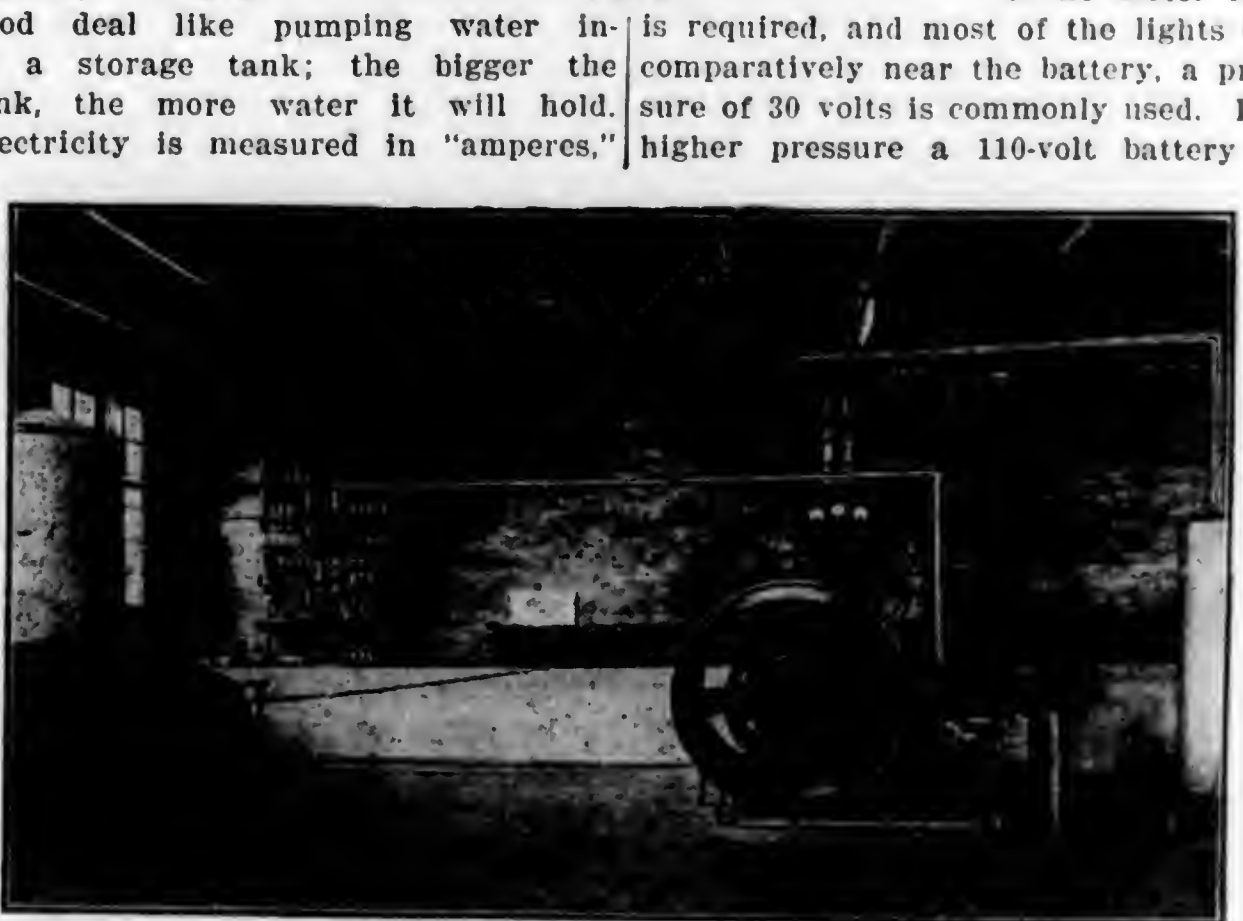


Fig. 2

and a battery is said to have a certain number of "ampere hours" capacity, meaning that when it is discharged a certain number of amperes will flow for a certain number of hours before the charge of the battery is exhausted. A 100-ampere hour battery will discharge 10 amperes for 10 hours,

practically universal. No farmer needs to concern himself about the choice of a battery, however. All he needs to do is to decide how many lights he will require, and what motors he wants to run. The engineers of the companies that sell farm lighting equipments do the rest. It is part of their

business, and a very important part, to see that every customer is thoroughly satisfied with his equipment. This means getting things right from the very first.

In an article which is to follow this one, a typical installation will be described in detail, with photographs to show just how an equipment like that shown in Fig. 2 was installed and is operated. Back of the engine in Fig. 2 is the switchboard, shown separate from the rest of the equipment in Fig. 3. This switchboard has instruments mounted on it which tell how much current is going into or out of the battery, and just what its pressure is. The switchboard is arranged so that lights may be switched on to the engine alone, the battery alone, or both together. This makes it possible to charge the battery while the lights are on, or to disconnect the battery and take power from the dynamo direct, or to use the battery alone, while the engine is pumping water, or doing some other kind of work. It is well to remember that the gas engine used to drive a lighting generator is by no means confined to that work alone. Many equipments are in use where bone grinders, mills, hay choppers and other machines are arranged to drive direct from the engine, when the storage battery has been fully charged. Arrangements of this kind will be described and illustrated later—and we hope will serve to convince our readers how simple and practical modern farm electric equipments are and how easily and satisfactorily they may be operated.

Plant an Orchard

FRANK H. DOW.

A farm without an orchard cannot be considered a very charming place on which to make a home and bring up a family. There ought to be an orchard, even if but a small one, on every farm; and not only apples, but other fruits should be grown, because, even if not grown extensively enough to market, they add wonderfully to the comfort and enjoyment of the family.

When I commenced to work on my farm it was absolutely without any improvements, and the first work I did was to clear up a piece of land and set out an orchard. I was advised not to set out any trees until I got out the big white pine stumps, but just starting, as I was, the finances of the business did not seem to warrant the expense; so the trees were set out and plowing commenced afterwards and the stumps removed still later. The outcome was that the trees grew finely, because I kept the ground continually under the plow and I gained considerable time in the growing of the trees and getting apples; but there came a time when the stumps were all removed and I was glad that the trees had attained the growth they had then. As time went by another piece of land was cleared, stumps removed, and after having been plowed and cropped for a series of years and brought under a nice state of cultivation another orchard was set out and now is growing beautifully and beginning to bear.

My conclusion is that if a farmer has no orchard, the quicker he sets one the better, whether the land is in the condition he would like to have it or not—set a small one, anyway, and take good care of the trees; then later, if he wants a larger orchard, add to it. I would also urge any farmer who lacks an orchard to set one, regardless of his age. "Oh, I am too old to set out trees; I would not live to eat any of the fruit," is an expression frequently heard; but the farmer who takes this stand fails to take into consideration the increase in value of his farm with each year of the growth of the young trees.

THE GARDEN

Edited by W. F. MASSEY

All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

The Garden in August

August marks the beginning of the preparation for the fall and winter. Early in the month we make the first sowing of lettuce for the fall crop in the open ground. For this crop I use both Big Boston and Hanson. Prepare a bed well and scatter the seed thinly broadcast and rake in lightly. I prefer this to sowing in rows where the plants are apt to get crowded, while plants that stand single get far stronger for transplanting. Instead of sowing thickly extend the area to have an abundance of plants. Then, after sowing cover the bed over with gunny sacks to retain moisture at the surface and to prevent crusting. Then you can water on the sacks and not wash the ground. But watch carefully the first signs of germination and lift the sacks gradually by propping them up for a day or so with sticks stuck in the sides of the bed. Getting good plants in hot weather demands care. When all are well up take the sacks away entirely and then never let the bed suffer from lack of water. I use an overhead Skinner irrigation and can control moisture conditions perfectly.

Eggplants are another crop which will fall rapidly in dry weather if not irrigated, and to keep them in good health and bearing they must be watered when the rains fall.

Before the middle of the month make the first sowing of spinach for fall use. The smooth-seeded Norfolk Savoy is the best. The main sowing for late fall and early winter should be made about the twentieth of the month.

Succession crops of early varieties of string beans can be made during the early part of the month. In fact, my practice has been to sow a row all through summer as fast as the last row sown is well up. This gives us a constant succession and finally a good lot in the best condition just before frost, and these can be canned or packed down in brine in stone jars for winter use.

While the ruta-baga class of turnips would have been better sown in July, they may still be sown very early in August with prospect for the making of a crop. With the coming of August make the first sowing of the Early Milan turnips for fall use, and later in the month sow the regular strap-leaved varieties, and the large Purple Top White Globe. The Milan turnips are very early and grow so quickly that they can be sown later than other varieties. In North Carolina I once made a crop of these sown the first of October.

I have made three plantings of tomatoes. The first was, of course, the earliest ones that were forwarded under glass. These have been giving ripe fruit since the 12th of June. Another sowing was made in a frame under glass in late March, and the plants were set just as the early ones had full grown green fruit. These will come in just as the early ones are making rather inferior fruits, and when in full production they will take the place of the early plants, which will be cleaned out for later crops. Then later, seed was sown in the open ground, and the plants were set out about the middle of June. These plants will be giving their best fruits in September, and are now, in late July, growing finely. From these we expect to get a big lot of well grown green tomatoes just as frost is expected, and these will be wrapped as I have before said, each

in paper and packed in strawberry crates and put in a dry and cool cellar to be brought out to the kitchen window a few at a time to color up. I have had these run me for slicing until after Christmas. Where the winter squashes are grown the plants will now need attention in keeping them free of weeds, even by hand pulling, and the soil prevented from crusting badly. They are seldom much of a success this far south (lower Maryland) unless had very late, though I have seen fine specimens grown in the high mountain country of North Carolina.

Some of the Chinese and Japanese radishes can now be sown. The White Celestial and the Japanese Sakurajima make immense large white radishes, and they make an excellent dish boiled like turnips. The Red Globe or Turnip Chinese is also good and the old Chinese Rose Colored, too. This last is a very hardy radish and we have had them keep perfectly good here in the rows where they grew in winter when well mulched with rough manure. In fact, in North Carolina I have sold them all winter through, freshly pulled from the ground. They, too, grow to a very large size. The White Celestial is, on the whole, the best of winter radishes, being very mild and free from the pungency of some sorts.

Though in some seasons a rather risky crop, it is always interesting to sow some of the early dwarf peas early in August. I sow Sutton's Excelsior and Thomas Laxton in deep furrows, cover lightly and gradually work the soil to them as they grow. If they escape the mildew in the hot weather they will give good crops in late September. Spraying with Bordeaux mixture will help keep off the mildew.

This cool and moist season has been very favorable to later sown spring peas. Merely as an experiment I sowed Champion of England peas in May and, thanks to the season, we have had fine peas up to the middle of July, a crop that I never had here that late, and we had roasting ears, green peas and strawberries from the everbearing Progressive, all the same day, which seldom happens in this climate.

With the first of August I sow a cold frame of three sashes in parsley in rows 10 inches apart. This is for the winter use and the sashes are not put on until the weather gets quite frosty. The simple sash, well aired in all sunny weather, is all that the hardy parsley demands, and it is easy to sell all the surplus to the grocers during the winter. This sowing will run well into the next summer before seeding, and then will furnish all the fresh seed needed to sow another frame.

Keep the green peppers gathered closely and they will continue bearing better. I am growing, this season, the Pimiento, the best of all sweet peppers, for it is entirely devoid of any fiery taste. Not as large as Ruby King, but just the size for nice pickles.

Onion sets will now be ripening. I gather them and cure, in open trays in the sun for a while and then store in a dark and cool place. For early green onions I plant the sets here in September and keep some over for spring planting. These I keep covered in a dark out-house, being more careful to shield them from heat than cold, for I had rather have them frozen slightly than heated for sprouting. The nearer they can be

kept just above the freezing point the better. Yellow Potato onions are quite hardy and the sets poor keepers and these are always planted in the fall.

Be careful about working in the parsnips with sleeves rolled up, for I have had men with badly blistered arms from incautiously handling parsnip leaves when damp with dew.

Early in the month sow some Green Curled Scotch kale and set the plants like cabbages, and they will make im-

mense heads and when hit by frost will make fine greens. They will stand anywhere from Philadelphia south until Christmas, and here later.

Good strong plants of Brussels sprouts set now will make their little heads just as frost arrives, and are then at their best.

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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

The Importance of Variety in Wheat Growing

Just how far the variety of wheat affects the yield per acre is not fully realized by many farmers. It is an important question, since the cost of seed per acre in wheat is much higher than in the case of corn. One-sixth of a bushel of corn will plant an acre producing 60 bushels; a 20-bushel crop of wheat will require one and a half or two bushels of seed. In other words, 10 cents worth of seed corn will produce a crop worth \$36, while a 20-bushel crop of wheat, worth \$20, was grown at a seed cost of \$1.50 to \$2. Then, since a high proportion of the cost of growing wheat is due to the price of seed, it is clear that only the best varieties should be used. Wheat is not a cross-pollinated plant, and for that reason may be kept practically pure if mixtures are not allowed. This is a decided advantage to the farmer, since after once securing a valuable yielding variety it may be kept from year to year with excellent results. The old notion that wheat "runs out," or becomes less productive because it has been grown for several seasons, is practically exploded. Where care is exercised in cleaning and grading the seed, wheat may be grown indefinitely, providing, of course, that the land is kept in a good state of fertility. That there is considerable difference in the yielding capacity of varieties is shown by the many tests at the agricultural experiment stations. It is also true that no single variety will produce more than every other every year, which is probably due to the fact that no two seasons are exactly alike, and that the different varieties vary somewhat in their weather requirements. However, it is true that certain groups of varieties are generally found to produce better than other groups almost every year. Tests that have been conducted by the Agronomy Department of the Delaware Experiment Station during the past eight years show that the bearded wheats have produced better yields than the smooth varieties. That is, the bearded wheats seem to vary less in production than the smooth wheats. This is an important item when the profits of wheat growing are considered. These tests have been conducted in northern Delaware in the latitude of Wilmington, and represent conditions that obtain quite largely on the Maryland-Delaware-Virginia peninsula, and also where the maturing season of the wheat crop is attended with rather high humidity. These conditions subject the wheat to several fungus diseases that lessen the yield materially. It seems that the bearded wheats are less easily affected by these diseases than the smooth sorts. This has resulted in bearded wheats outyielding the smooth by about 6 bushels per acre over a period of seven years. This comparison is made between the best ten yielding bearded varieties and the best ten of the smooth. It also appears that the bearded wheats in the main have greater recuperative powers than the smooth, where late seeding occurs or where grown on less fertile soil. Specific tests have shown that the bearded wheats will often produce as great a yield without fertilizer as the smooth wheats do when fertilized normally. This would indicate that the bearded wheats can utilize the plant food of the soil to better advantage than the smooth sorts. However, these same

bearded wheats will produce proportionately more than the smooth when the former are fertilized. These are some of the reasons why the bearded wheats maintain a more uniform yield from season to season under the conditions above. The custom of the farmer of buying a so-called new variety every year or two is not always favorable to high yields. Many of these new names are given to old varieties that have been known to the wheat growers for years. They do not produce any better than formerly, and sometimes the new name disguises an inferior variety. Before a well tried variety of wheat is discarded it would be well to sow the new sort along beside it and compare yields. Seasons vary so much that varieties grown in different years do not show comparable results in every case. The bearded wheats have never been in popular favor since the days when the wheat crop had to be cut and harvested by hand, for the reason that the awns or beards rendered the work disagreeable. Yet careful experiments at the Delaware Station

have shown that the bearded varieties of wheat tiller more freely than the smooth. The tendency to tiller in the wheat plant seems to be associated, more or less, with vigor and resistance to unfavorable conditions. Hence this may be the reason for more favorable yields with bearded wheats. Very often the mere length of head in wheat is considered in choosing a desirable variety, but this should not be the only character sought, since the number of tillers per plant and the quality of the grain (in other words, the size of the kernel) determine to a large degree the yield per plant. One should note whether the variety tillers well and has a plump, hard kernel. Some of the most widely advertised varieties on the market have a splendid head, but often it does not fill well, nor tiller with the average. In early days it was desirable to select or breed varieties of wheat that had a stiff straw, since the soil was more fertile than now, and much of the wheat lodged. Now, as the soil is more depleted and a better balance of plant food is supplied through the use of commercial fertilizers there is less tendency for wheat to go down. In getting the stiff straw varieties unconsciously the tendency to tiller was somewhat reduced in the case of winter wheat. Hence the larger heads and stiffer straw really were not contributing to the yield so greatly as was thought. The bearded sorts will stand well under normal conditions of fertility, and on account of finer straw more tillers occupy a smaller space than some of the smooth varieties with coarse, stiff straw. Also the bearded varieties with a more marked tendency toward tillering may be sown at a lower rate per acre and still give good yields. Quite often 4 pecks per acre will produce a good yield as a 6 or 8-peck seeding. All of these considerations should be weighed in selecting a variety. You nearest experiment station can usually give you valuable suggestions concerning varieties, as here they have been studied comparatively for a number of years. The Delaware Station has found that the bearded varieties, Gypsy, Red Wonder, Rudy, Reliable, Mediterranean and Miracle among the most valuable, while Leap's Prolific is the best smooth wheat yet tried. It will produce practically as well as the bearded sort named. Other good smooth sorts are: Poole, Carrell's Prolific and Dawson's Golden Chaff, yet these do not rank with the bearded varieties mentioned. Do not buy a new variety from a neighbor merely because it has made a good yield for a single year. His land may have been in excellent condition, which may account for the yield rather than that the

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variety is inherently a better producer. No matter what variety is seeded, see that the grain is carefully screened and graded. In this way many diseased kernels may be eliminated which might lessen the next crop. Beware of widely advertised wheats sold by distant promoters. Sometimes these are entirely unfit for your conditions. The Karkov wheat is an example. It does well in the semi-arid west but is not the best sort for eastern conditions, although it is widely advertised.

Spreading Ground Limestone in the Summer

The late summer, particularly in the corn belt, is more or less a slack period. It is then that much of the manure is usually hauled out and spread. This is a good time also during which to haul out and spread ground limestone. Since this material is not so soluble as the burned forms of lime it should be applied in advance of the time the crop will need it. At this season of the year the land is firm and heavy loads can be hauled. Land that is to go in corn in 1917 may be topdressed with ground limestone during the late summer and the winter rains will dissolve and carry down more or less of the lime. In this manner it becomes to an extent incorporated with the soil and saves the extra handling required in spreading over the plowed land at a busy time in the spring. This method of applying the lime distributes the farm labor to better advantage and has the added merit of requiring less labor in handling the material in the field.

The Hessian Fly

Late seeding of wheat has been recommended as the only practical method of combatting the Hessian fly. It has been demonstrated without a doubt that this is the only way the farmer can get at the problem. However, late seeding means that the crop is likely to go into the winter in a less vigorous condition than if sown at the normal time. In order to counteract this, some fertilizer should be used to cause the plants to grow more rapidly, even though late planted.

Experiments at the various stations have shown that late seeding will be accompanied by good yields if the crop is handled in such a way as to make a good covering for the land before winter sets in. This can be accomplished only by having the land in excellent condition of fertility as regards plant food. Early plowing followed by frequent harrowings will often put the soil in a condition that will supply sufficient plant food to enable the crop to make rapid growth. However, this can only be done on land that is well supplied with organic matter and naturally fertile. In other cases, a liberal supply of available plant food in the form of commercial fertilizers should be used.

Experiments by the writer have shown that a difference of two or three weeks in the time of seeding may result in equally good results, providing fertilizers are used with the late sown wheat. This is a point in wheat culture that should not be lost sight of by the farmers, as it means that the Hessian fly can be avoided by late seeding, also that the late seeding will be accompanied by good yields if the proper fertilizers are used.

A. E. GRANTHAM.

Queries Answered

Crop Rotations.—Mrs. J. R. Virginia, writes: "Have a farm of about 125 acres, in a run-down condition, near the Blue Ridge mountains. Has never been limed. Now I want to farm it in a 3-year rotation. It is divided into six fields. Has been planted to corn, wheat and grass rotation for quite a while. There are a good many small bushes and briars coming up in places over the fields. Would you advise planting corn in the spring and follow with wheat without grass and then

Beat the Hessian Fly!

Seed your wheat late so that the Hessian Fly cannot lay its eggs upon the young plants and injure them next spring. The United States Department of Agriculture (Farmers' Bulletin No. 640) says:

"The application broadcast of some quick acting fertilizer containing a large percentage of phosphate (phosphorus) made as soon as general infestation is apparent will cause the plants to tiller more freely and give them sufficient vigor to withstand the winter and thus increase the number of healthy stems the following spring. . . . While it may seem 'far fetched' to bring forward as a preventive measure the enrichment of the soil, a fertile soil will produce plants that will withstand with little injury attacks that will prove disastrous to plants growing on an impoverished or thin soil. . . . It is also on the thin or impoverished soil that the difficulty of sowing late enough to evade the fall attack and at the same time secure a growth sufficient to withstand the winter is encountered, and whatever can be done to obviate this difficulty will constitute a preventive measure."

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fallow and lime the land after wheat is removed, and seed to grass? We have a field limed and seeded to wheat and grass last fall. Would you advise running a mow over it in September? Would you fence the rotation?"

If the fields are not too rolling, so that the soil washes badly, it seems a good plan to adopt a 3-year rotation of corn, wheat and red clover and timothy. Cowpeas might be seeded in the corn at the last cultivation and these turned for the wheat. After the wheat is removed the land may be plowed, limed and kept fallow until late August. Then the timothy and clover may be seeded. The hay is cut one year and the land goes back to corn. By this plan of rotation it will be possible to keep in check the briars and bushes more effectively than where the grass is kept down two or more years. Where the summers are very dry, or where the soil washes badly, this plan is hardly to be recommended, as the nurse-crop method of seeding the grass will be better. Since the farm is divided into six fields, use two of them for each of the crops. If you keep considerable cattle it would be advisable to fence the land so that it may be pastured. It is a good plan to run a mow over newly seeded grass fields late in the summer or early fall. This will prevent many of the weeds from going to seed.

Crimson Clover.—J. P. M., Kentucky, writes: "I have read your article in a recent Practical Farmer regarding crimson clover and am much interested in it. I have 6 acres of river bottom land now in corn, and I want to sow it to crimson clover to plow under next spring. What time would you advise me to sow it in this latitude? I am only 47 miles south of Cincinnati, Ohio. I would like to sow it at once, just before the last cultivation of the corn, if not too soon."

Crimson clover may be seeded satisfactorily any time from the middle of July to the middle of August in your latitude. If you can arrange to seed just ahead of the last cultivation this will save labor and will give good results providing the cultivation does not cover the clover too deep. For the final working of the corn we prefer a one-horse cultivator with ten or a dozen teeth, which leaves the land well stirred, but does not throw enough soil to cover the seed too much. If possible seed just after a good soaking rain as soon as the land can be worked. Use about 15 pounds of seed per acre.

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HORTICULTURAL

Edited by C. A. McCUE

Fire Blight

A recent trip through the southern portion of Delaware revealed a serious condition of affairs in many young apple orchards. Everywhere one could see the ravages of the fire blight. We have become rather accustomed to this trouble, but for the past two years its progress has assumed alarming proportions. There are thousands of acres of young apple orchards that are just ready to come into bearing and the condition of many of these trees is enough to give even the most optimistic fruit grower a feeling of heart failure. The older orchards are not in such a serious condition, and trees over fifteen or sixteen years old do not seem to suffer irreparable damage. The Yellow Transparent appears to be one of the worst sufferers. An orchard near Bridgeville was visited, in which fully 90 per cent. of the blossom clusters had been struck by the blight. The trees are large and had given promise of an exceptionally large crop. In these trees the disease appears to have been checked as soon as the fruit spur was killed. Yet if no further attacks occur, it will be two, three or even more years before the trees can regain their normal bearing capacity. The fruit spurs of the apple usually bear only every other year, and the greater proportion of the fruits are borne upon spurs, hence the destruction of so many spurs seriously affects the future profits to be made from these trees. In the younger trees the disease is not confined to the fruit spurs, but attacks the young growing tips of the branches and often works down the branch until several feet of limb may be killed.

Varieties vary greatly in their susceptibility to the fire blight disease; some are apparently immune, while others succumb quickly. South of Milford, Delaware, is a young orchard that contains a great many Starr apple trees about two years old. Fully 90 per cent. of these trees are apparently "blighted" beyond recall. The Starr is even more susceptible than the Yellow Transparent, and after seeing this orchard we certainly would not recommend the Starr for commercial planting. In the next row to a lot of Starr, where practically every tree was ruined, were a lot of Williams Early. Not a trace of blight appeared upon them. Yet we could not reason from this case that the Williams was blight-proof, for in another orchard of Williams about seven years old we saw plenty of fire blight. The Williams appears to suffer most from the collar rot form of the blight, and north of Milford we found an excellent orchard of Williams in which fully 5 per cent. of the trees had died or were dying from collar rot.

In an 800-acre orchard near Bridgeville we found the blight not serious as yet, but here and there throughout the orchard black and brown foliage was to be seen. In this orchard the trouble was worst upon Yellow Transparent and Jonathan; Williams were practically clean, while Staymans showed quite a little infection. In older trees the Old Winesap does not seem to suffer more from the killing of the blossoms, and in some cases even they escaped. The writer knows of no more serious trouble threatening the apple industry of Delaware than this blight. The growers are greatly alarmed, and justly so. They say something must be done, yet one wonders what can be done to conquer the trouble unless the growers make up their minds to work together for its

eradication. Blight can only be controlled by a neighborhood co-operation, with every one doing his share. An infected orchard may be the source of the disease for an entire community.

Before attempting any method of control the growers must thoroughly understand the nature of the disease. The trouble is due to a minute microscopic organism known as bacterium. This little germ is so small that it can only be seen through a powerful microscope. The organisms multiply with almost incredible rapidity. The common source of infection is what are known as "hold over" cankers. By "hold over" we mean portions of diseased wood in which the organism does not die out over winter, but is able to begin life anew each spring. Fortunately the hold-over infections are not many in apple trees, but throughout all Delaware and most of the neighboring states the apple trees have a near neighbor in which the blight almost invariably develops the hold-over state. I refer to the Keiffer pear. The Keiffer was once hailed as a blight-proof pear; "but not now." The older Keiffers appear to be able to throw off or resist the inroads of the disease, but the young trees succumb quickly to body or trunk cankers. All pears are more or less badly attacked by the blight organism, but the Keiffer, from its very resistance, is a menace to the apple orchards in the nearby neighborhood. In the spring the organisms in the hold-over infected places on the Keiffer, other pears, and some apples, become very active, with the result that the canker becomes dark brown and oozes out a milky, sweetish secretion that attracts various insects, particularly the honey bees and nectar loving flies. These, especially the bees, get their mouth parts filled and their feet covered with millions of active blight bacteria and then fly away on their mission of pollenizing apple blossoms. One bee can carry enough of the bacteria to thoroughly inoculate a thousand apple blossoms, and thus start spur infections of blight. Yet we must have the bee if we are to get our apples pollenized. What is the answer? Do away with the source of infection. Eradicate every Keiffer pear that shows signs of blight, or else cut the cankers in winter and disinfect them. Cutting out blight efficiently means trained labor, in some cases an impossibility to obtain.

In one orchard visited the varieties were Yellow Transparent about eight years old, and Keiffer pears. The Keiffers were nearly dead from blight, and the crop of Transparent increased rapidly as one went down the row and put distance between him and the Keiffers. The blight on the apples next to the Keiffers was fully 50 per cent. worse than on the side most distant from the pears.

Wet, cool spring weather furnishes an ideal condition for the growth of the blight, when the tree has once become infected. Hot, dry weather seems to check its ravages. If the summers are hot and dry in July and late June the majority of germs in the apple wood will die. If the opposite condition prevails the bacterial growth goes on and many of the organisms may live over winter. Hence the necessity of good, cautious, thorough winter pruning. One can usually tell a hold-over blight infection in the apple. If the organism is dead there is a distinct crack in the bark between the diseased wood and the healthy wood. This crack should extend all the way around the twig. If it does, that particu-

lar twig will cause no further trouble. If the crack is absent or runs only a portion of the way around the twig you have a hold-over case that should be cut out before spring. Make the cut at least 8 inches below any signs of the trouble. In most cases a day spent in cutting out blight in the winter is worth more than a week's work in the summer. Sometimes it pays to cut out in the summer, but if the pruner does not understand the disease and know perfectly what he is doing, he may do more damage than good.

It is seldom practical to cut out blight in either summer or winter in old trees, but in young orchards 10 years or less it certainly pays to go after the blight. If your orchard is blighted, don't begin to cut until you know what you are about. If you don't know, get some one who does.

Queries Answered

New Apple Orchards After Old.—J. B., Virginia, writes to ask if she can set a young apple orchard immediately after taking out an old one.

A young apple orchard may be planted where an old one has been taken out, if conditions are good. By good conditions we mean a congenial soil that has not been depleted of the most of its plant food. If the old orchard had been well cared for and had received a fairly liberal treatment as regards manure, or commercial fertilizers you would be safe in replanting. If the old orchard had been starved it would be better to build the land up before resetting to apple trees. If you can afford to wait it would be better in any case to crop the land to a hoed crop for a year or so before replanting. It is true, of course, that one may build up the soil in a young orchard while the trees are growing, but it is easier to do the most of your building before the trees are set. So much depends upon local conditions that we hesitate to give advice. You will have to be governed largely by your own good judgment regarding the state of fertility of your land. Resetting as soon as the old trees are out may be a sensible proposition in some cases and a foolish move in others. You must remember that it has been estimated that a 20-

year apple orchard takes more plant food out of the soil than twenty successive crops of wheat. We believe, as stated above, that it would be better for you to renovate your land by cropping to hoed crops a year or so before replanting.

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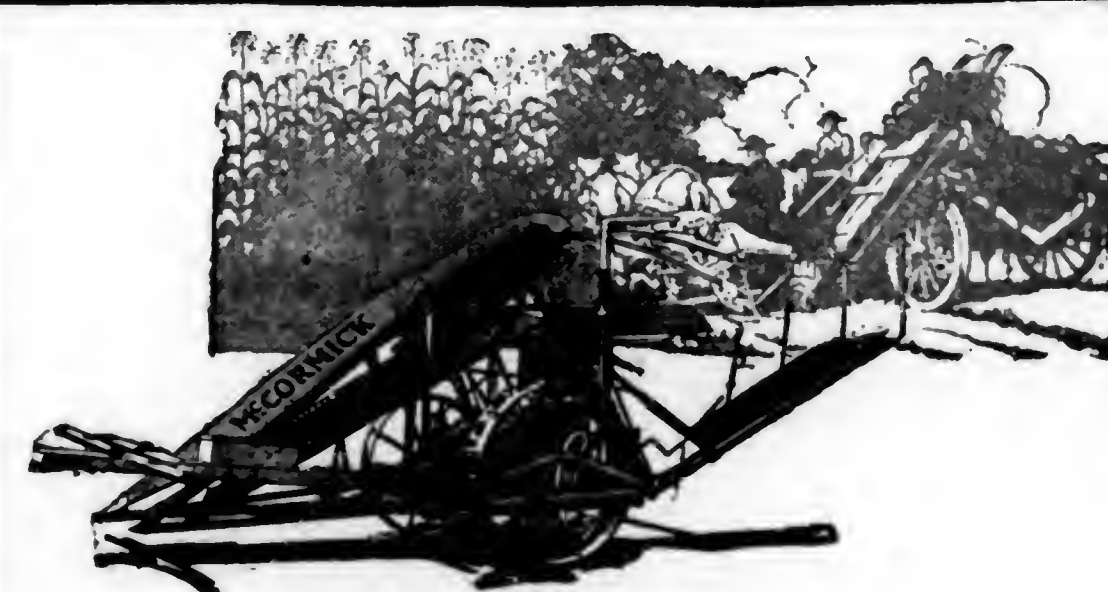
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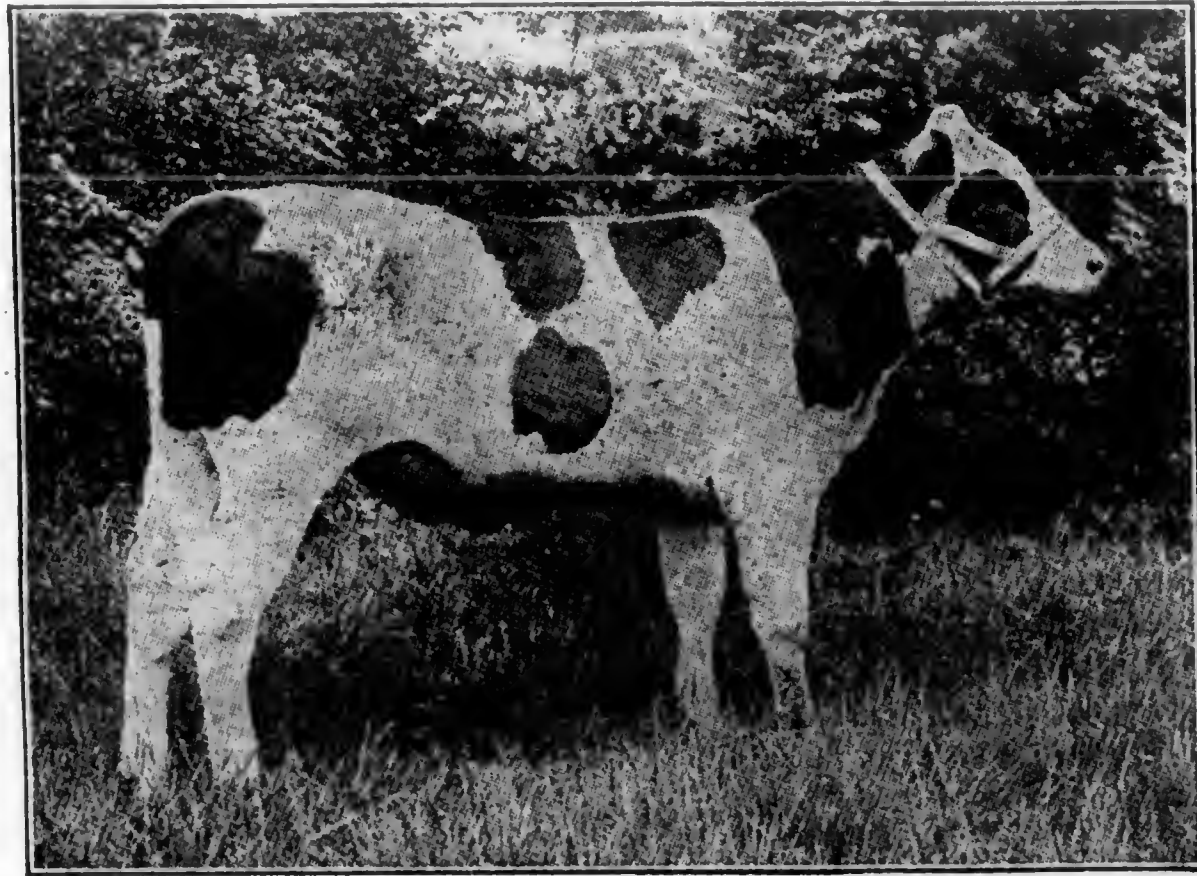
Lameness in Horses

J. H. REED, V. S.
(Continued from July 15th Issue.)
SWEENEY.

Sweeney, or shoulder slip, consists of a sprain, followed by atrophy or wasting away of the muscles of the shoulder, principally those covering the shoulder blade. In severe cases the shoulder joint (the bones of which are held together by pressure of the muscles, and a capsular ligament, there being no lateral ligaments) appears to slip out and in to a greater or less extent at each step; hence the name "shoulder slip." This lameness is noticed principally in young horses that are put to work on soft or uneven ground, and especially in young horses that are worked in the furrow to the plow. The horse, not being accustomed to such work, will frequently place the rear foot upon the land, while the off foot is placed in the furrow, and this uneven treading tends to sprain the muscles mentioned, and the bones of the joint, being practically held in position by muscles, will, when these muscles have wasted away to a considerable extent, show the slipping action noted.

SYMPTOMS.—Lameness in the early stages is not well marked; in fact, no lameness may be noticed. The earliest symptoms noticeable are heat and swelling of the muscles, which are soon followed by a wasting or shrinking of them. In many cases there being an absence of marked lameness, the swelling and heat escape notice. The shoulder blade, or scapula, is a flat, triangular bone placed upon the ribs and held in place by muscular attachment; on the outer surface of the bone there is a ridge of bone, running from above downward almost the whole length of the bone. This ridge is called "the spine of the scapula." It divides the scapula into two unequal parts, about one-third in front of and two-thirds behind it. This spine, while easily felt just underneath the skin in a healthy horse, is not visible, as the muscles on each side are of sufficient size to make the surface practically smooth; but when the muscles become atrophied it is quite visible as a ridge running from above downward, with a more or less well marked hollow on each side. The skin appears to the touch to be quite close to the bone, but there is an absence of heat, or soreness, to pressure. Inflammatory action has ceased, and, as a consequence, swelling has subsided, and as a result of the inflammation the muscles have become atrophied, or lessened in bulk. When the muscles that pass over the joint have been involved, and have become atrophied, the slipping in and out during progression is quite noticeable, but in a large percentage of cases these muscles are not involved. Lameness is not pronounced, except in cases where this slipping is present. Action is defective, but it is not probable that the patient suffers pain. The lessening of the muscular fibre renders the patient unable to use the limb properly. The limb is brought forward with a rotary motion of the foot, and more or less difficulty is experienced in lifting the foot over obstacles. The animal stands sound, and except in the early stages there is no heat or tenderness to pressure. As the disease progresses the peculiarity of action and the wasting of the muscles become more marked, and in advanced cases considerable trouble in progressing is sometimes noticed. Horses affected with sweeney in an ordinary degree, progress with considerable ease on level ground, but on soft or uneven ground the defect in action is usually well marked.

TREATMENT is slow. It requires several months to effect a cure in a well-marked case. Treatment must be directed to cause a reproduction of muscular tissue. The muscular elements are still there, but have become so reduced in size and strength that the muscles are unable to perform their functions. It is better to give the patient absolute rest; but, at all events, he must not be used on soft or uneven ground, and should not be asked to do heavy work on ground of any nature. While a little light work on hard, level ground may be given without danger of serious results, recovery will be quicker if given rest. In order to cause a reproduction of the muscular elements, it is necessary to set up, and keep up, a local irritation. Different methods are followed. Some recommend seatons extending from the top to the bottom of the shrunken muscles, both in front of and behind the scapular spine. Some recommend often repeated friction with the hand or a smooth stick; some recommend the daily application of a strong, stimulating liniment, and some favor repeated blistering. Probably better results are obtained from blis-



King Champion Rag Apple 179305—the \$20,000 Holstein-Friesian Bull Calf

Consigned to the Detroit Sale by Oliver Calana, Jr., Elma Center, N. Y., and purchased for \$20,000 (the top price) by A. W. Green, Middlefield, Ohio. Born Nov. 6, 1915. Sire, Rag Apple Koradyke 8th 75116, the \$25,000 bull, grandson of Pontiac Koradyke through both sire and dam (Pontiac Lady Koradyke, 88423). Dam, Lady Pontiac Lohanna 101884, world's record senior 3-year-old, 688.3 lbs. milk, 41.811 lbs. butter, 5.08 % fat.

ters than from other modes of treatment. The ordinary paste blister, made of 2 drams each of cantharides and biniodide of mercury, mixed with 2 ounces of vaseline or lard gives good results. The hair should be clipped off the surface of the shrunken muscles, with a slight addition all around of the sound muscles and the blister well rubbed in. The effect of a blister depends greatly upon the manner of application. In order to get well marked results it is necessary that it be well rubbed in with smart friction. The animal must now be tied so that he cannot reach the blistered surface with his mouth, else he will get his nose, lips and mouth blistered, and probably tear some skin off the blistered surface. In about 24 hours the blister should be again well rubbed in, and in 24 hours longer the parts should be well rubbed with sweet oil or fresh lard. He may now be turned loose in a box stall, and the parts oiled every day until the scales come off, when he should be tied up and the blister again applied, as at first. After this the parts should be blistered every four or five weeks, and between blisterings (after the scales come off) it is good practice to use friction by hand-rubbing, or the occasional application of a strong liniment. The length of time required to effect a cure varies in different cases. Any length of time from 3 or 4 months to a year may be necessary, but treatment should be continued until the parts regain their normal bulk and tone.

Molasses Aids Appetite in Fattening Cattle for Show

It is not too soon to consider the fitting of stock for the fall fairs. Condition and bloom or finish are the important points to keep in mind in fattening cattle for show purposes. For the younger animals milk is the best possible feed for producing this effect. Along with milk, the Pennsylvania State College School of Agriculture Experiment Station advises a supplementary ration for young stuff as follows: Corn meal, six parts; bran, two parts; ground oats, two parts; oil meal, one part. For older animals the same ration with the exclusion of bran is advised.

If steers begin to get too soft of flesh the college authorities recommend replacing half the corn with barley or reducing the amount of corn fed. Often a small amount of molasses added to the ration will cause the cattle to consume more and hence to make more rapid gains.

Animals intended for show should be exercised regularly. Exercise produces firmness. Unless a steer has been exer-

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was afterwards increased to 100. The wool money was about the best money. I remember one year in war times when we sold our clip at 90 cents per pound.

That was the year we paid off our last debt, and then had a good sized bundle of greenbacks left over, which we proceeded to deposit in the little old hair trunk in father's bed room, there being no bank in the village at that time.

In the course of our sheep raising we learned many valuable lessons. One of these was that sheep need good, clean, airy winter quarters. In our early experiments our flock was housed in the basement of the general barn. These quarters were warm, all right; yet the sheep did not always do as well as they might. So we decided that we must have a regular sheep barn. On a distant abandoned tract we found a barn for sale. This was bought at a low figure, taken down, hauled home and put up a little to the west of our other barn. This sheep barn was about 40x60 on the ground, and with 16-foot posts. It had the regular old barn floor running through the center. On each side were the sheep pens, and at the south these were all open to the light and air. Over head were the lofts where we put away our hay for winter; and this hay was of the more common varieties. Along each side of the barn floor were the feed racks, which were very simple affairs indeed, being just openings above the level of the floor, of the right size to admit a sheep's head and neck, and no more. In stormy weather we would feed inside, but in fine weather we scattered a foddering out in the yard, which seemed to be an excellent scheme, as the sheep appeared to enjoy their feed better out of doors than in, and we, furthermore, were satisfied that open-air feeding was most wholesome, after all.

After that we had one of the most healthy flocks in the county, and enlarged our flock to the limit of our pasture and hay supply.

Another strong point in father's mode of farming was bean raising. Some years he planted as high as 5 acres of beans, which was considered a remarkable feat in the neighborhood. A hundred bushels were frequently the output, which was no small item when \$3 per bushel was the prevailing price.

Now, bean fodder makes one of the best known rations for sheep. So we used to store our beans in the sheep barn, thresh them upon the big barn floor, and then pack away the bean stalks and leaves for the sheep. So the sheep barn also became the bean barn, and thus we made one hand wash the other.

H. A. CRAFTS.

Wool and Mutton Necessary in Profitable Sheep Raising

The production of both wool and mutton are necessary to realize the greatest returns in sheep raising. This is the conclusion from results obtained by the Pennsylvania State College in an investigation which had for its object the comparison of wool and mutton types of sheep.

In the investigation in question Shropshire sheep as the mutton type were compared to Merino sheep as the wool type. The investigation showed that the Merino possessing the smooth-bodied type is equally as profitable as the Shropshire, under certain conditions. As the Shropshire raises the highest percentage of lambs, however, it has a slight preference in localities where grain feeding and intensified farming are practiced.

Whether or not to select mutton or fine wool breeds of sheep depends largely on the conditions of the farm and

on the market. If early maturing sheep are desired, mutton breeding is best. When sheep are raised on grass the Merino will utilize it better.

Results indicate that when 100 per cent. lambs are raised 23 per cent. annually will be returned on the initial cost of sheep in mutton and wool.

The Merino sheep return about one dollar less per hundred pounds for mutton than do Shropshire lambs. The Merinos, however, produce wool that is worth 33 per cent. more than that of the Shropshires and their lower cost of maintenance as breeding animals equalizes the superior merit of the Shropshire as a mutton producer.

Solving the Marketing Problem

(Concluded from page 291)

amount of skepticism concerning the success of the undertaking. There is no excuse for a producers' company to venture with too little capital, because the ordinary amount required from each member is generally only from \$5 to \$25. However, additional capital may be provided for the association through making a loan on a basis of the combined credit of the members of the organization. Most any local bank will be glad to take such a loan, especially if the society has been incorporated and is doing business in a business-like way. The effect of independence is such that it will be wise to have the sum needed as a permanent investment, not only subscribed, but actually paid in, while a small surplus gives added confidence and trust to the project. A producers' company cannot afford to operate without ample capital, and the members should be very keen about making the arrangements for ample capital; the borrowing should be incidental rather than the main foundation of the business.

To reach the efficient degree in the marketing of any product, it is very essential to determine in some way the quality of the product without actually inspecting it when it arrives on the market. As soon as the market has fixed certain grades and certain qualities of products and has legally determined what these grades and qualities shall be, the product is said to be standardized. This standardization of farm products is extremely desirable, but it presents a great many difficulties. The United States government has standardized certain grades of products and by these grades and standards this commodity becomes known in the commercial world and can be bought on the market many times without inspection. Wheat has been standardized by grades in certain states where a great deal of wheat is bought and sold. In Canada they have established certain grades and standards of wheat and have a number of inspectors to see that these standards are maintained in the purchase and sale of wheat. With perishable products, such as potatoes, onions, fruits, vegetables, it is many times difficult to fix any standard of quality uniform throughout the United States, or over any wide extent of territory. However, it is possible to standardize the size of the article, the color, shape and uniformity. The United States government recently passed an optional apple packing law defining certain grades and standards of apples, depending upon their size and soundness. It is evident that the handling and distributing of any farm product in large lots by one marketing agency, means the possibility of establishing certain grades and packs which will have a tendency to become standards on the market, and the establishment of standards is one of the most

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civilization is organization and it advances in proportion as people learn to live in groups. The big business of today is so much more efficient than the small business of sixty years ago, because men have learned the enormous value of co-operation. Co-operation is infinitely more efficient than the competitive scramble that even the dullest and stubbornest of stand-patters are realizing this fact. Producers have not yet begun to scratch the surface of the possibilities of organization. The thousands of farm produce dealers, who supply the citizens of our large cities with the produce a thousand times more expensive than if one concern managed the marketing and distributing. A steel company or a packing company, for instance, makes multi-millionaires and improves the condition of the producers and the workmen but slightly, if at all. The California Fruit Growers' Exchange,

A well developed bull can be used on a limited number of cows when about a year old. If such bull is used on a large number of cows at this age it will seri-

—R. S. Clark in "The Holcad" (published by the students of the Michigan Agricultural College).

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A dark, high-contrast black and white photograph of a river scene. The foreground is dominated by dark, silhouetted trees and foliage along the riverbank. The river reflects the light from the sky, which is visible through the canopy. In the background, a small, light-colored building is partially visible through the trees.

desired features of the trade in agricultural products.

The standardization of packages is much easier and most of our states have laws standardizing weights and measures of all raw products, and have standards of purity which must be sustained in products offered on the markets. After custom has determined the grades of any article, and the packages, it is comparatively easy to make laws which give a legal standing to these standards and grades. One of the greatest benefits of the co-operative society is its ability to establish a standard for the products they handle and give them a legal standing by means of registered labels or brands. The western apple growers have packed and labeled so well that the apple box and the apple pack which are used by the fruit growers in Oregon and Washington have become a fixed commercial standard by which apples are purchased and sold. This very desirable result might well be brought about in the East provided the fruit growers and the market men would agree upon standard packages and grades. Co-operative shipping exchanges should take interest in this feature and determine what these packages and grades shall be, thereby standardizing their products, which would ultimately open up new and profitable markets.

Co-operative associations should arrange for the government reports on crop conditions in other sections producing like products. They should also arrange for the daily telegraphic reports on the different crops, issued by the Federal Office of Markets and Rural Organization. These reports, with local market reports, will enable the manager or the producer to place that day's shipment or shipments on a healthy market and enable the shipper to avoid the glutted markets—many times turning absolute loss into a direct profit by the knowledge of conditions in all markets.

Co-operation is the working together of a number of persons for some common end. In agriculture, it means the organization of farmers for the transaction of business pertaining to farming. Its purpose is to do jointly what cannot be done as economically or as well by individuals. Its success depends upon several factors. A sufficient amount of business is essential. The co-operators should live near enough together to have a community interest and personal acquaintance. The business transacted should be simple in nature, free from any great degree of speculation and of vital importance or convenience to the co-operators. Loyalty to the organization and an intelligent spirit of co-operation are fundamental. Leadership and harmony are essential and minor differences among co-operators must be coordinated to the common good.

Civilization is organization and it advances in proportion as people learn to live in groups. The big business of today is so much more efficient than the business of sixty years ago, because men have learned the enormous value of co-operation. Co-operation is infinitely more efficient than the competitive scramble that even the dullest and stubbornest of stand-patters are realizing this fact. Producers have not yet begun to scratch the surface of the possibilities of organization. The thousands of farm produce dealers, who supply the citizens of our large cities with produce a thousand times more than if one concern managed marketing and distributing. A steel company or a packing company, for instance, makes multi-millionaires and improves the condition of the producers and the workmen but slightly, if at all. The California Fruit Growers' Exchange,

on the contrary, is as well organized as the Standard Oil Company, but its officials and managers receive modest salaries, while the vast profits arising from co-operation go to those who grow the fruit. Will somebody please come forward and explain why it is so easy for manipulators, middlemen and capitalists to organize, and so hard and so "socialistic" for producers of farm products?

Farmers Should Raise More Sheep

W. A. GRAHAM.

At this time the outlook for profitable sheep growing is unusually bright. The price of wool, and mutton, is as good as any one could ask, and fine, well grown lambs next fall are bound to be high. The trouble just now is, far too many farmers have no sheep. I advise those desiring to embark in the sheep business to begin at once. This is a fine time to buy up a flock, and get ready for next year.

Soon after shearing time many want to dispose of a portion of their stock. Generally the older ones are those offered for sale, but none are too old for breeding for lambs next season. On the average farms there is much grass and other herbage that will go to waste if sheep are not there to browse about. Sheep eat so much wild grass and weeds no other stock will consume. Not only so, but they grow fat on such waste.

I have found sheep such good scavengers for the farm that had weeds have almost ceased to grow, and I do not understand why so many who need flocks of sheep pass them by, believing them unprofitable. Consider the crop of fine lambs one can grow annually, the wool that can be had, and every year there are many that are to be disposed of for prime mutton; and very much of all this profit is derived from grass, hay, fodder, straw and the annual herbage going to waste in the woodlands, and along fences, ditches, etc. So little grain is needed for sheep that the profit for their growth is almost all made from very cheap material.

I do not advise trying to grow sheep too cheaply. Provide an abundance of good pasture and water, but at such times as one has weedy grain fields, brushy woodlands, or foul spots on the farm, turn the sheep in. They will clean up the premises better than any other way I have tried, and make money right along for the owner at no expense.

Sheep are the nicest stock to winter I have ever tried. All they need is roomy open sheds provided with racks for hay, fodder and straw. Some grain at times should be given them, but if there is good mixed hay in abundance the winter season can be passed through for all the stock sheep without much grain. They keep their sheds so clean but little attention has to be paid all winter to their quarters, and the fleeces are not injured after a long season of confinement.

Queries Answered

Agas for Breeding Ragweed as Roughage.—J. R. Virginia, writes: "How old must a hog and bull be before they are ready to serve, and how old must a sow be before she is gotten with pigs? Is ragweed, mowed in fall, good for sheep in winter?"

The age at which a boar is ready for service will depend in a large measure upon his development. A good thrifty boar from 6 to 8 months can be used but only on a limited number of sows. Strong, vigorous, thrifty gets can be bred when they are about 8 months old. This will bring their first litter when the sows are a year old. Such practice is not conducive to the best development. Many breeders prefer to wait until the sows are from 10 to 12 months old.

A well developed bull can be used on a limited number of cows when about a year old. If such bull is used on a large number of cows at this age it will seriously

interfere with his development. Ragweed mowed in the fall will not make good forage for sheep during the winter. A flock of sheep will pick over such weeds and consume the more tender portions, but they will not be very thrifty if no other roughage is supplied. It will hardly pay to store the weeds, as they contain such a small amount of food material and are not a desirable feed.

Prize Awards

We have awarded prizes for subscribers' manuscripts published in this paper during the month of July as follows:

LIVE STOCK AND DAIRY DEPARTMENT.

First prize (\$6.00), "The Place of the Dairy Cow on the Small Farm," by Mrs. Blanche R. Martin (page 277, July 15th issue).

Second prize (\$4.00), "Sheeping off Corn," by George H. Dacy (page 285, July 15th issue).

GENERAL SUBJECTS OF FARM INTEREST.

First prize (\$6.00), "Farm Tours for Farm Workers," by Mrs. H. M. Woodward (page 274, July 15th issue).

Second prize (\$4.00), "Boosting a 'Peach Week' Sale," by A. J. Bradley (page 277, July 15th issue).

The National Dairy Show

The dairy products premium list for the National Dairy Show at Springfield, Mass., October 12 to 21, is ready for distribution, and it, with full information and entry blanks, will be mailed to any one on request by W. E. Skinner, 16 Broadway, Springfield, Mass. The National Dairy Show is an active stimulator of the industry and deserves our farmers' support. We hope many of our readers will exhibit.

Rime of the Plowman

It's some folks joy to hunt and fish,
Or trap the lakes an' streams,
An' some seek recreation
In dreamin' idle dreams.
Some folks is active all the time
An' some, when pleasure calls,
Jest polli off the top fence rails
With the seats of their overalls.
But if it's me you're askin'
What pleasures most divert,
I like to hear the harness creak
An' smell the blessed dirt!
I like to trudge the furrow
With the lines around my back,
An' the blackbirds all a-scramblin'
For the bugs along my track.
I like it in the mornin'
When the breeze is brisk an' cool,
An' the kids with their shinin' dinner pails
Go polli' off to school.
I like to sort o' feel the wind
A-puffin' out my shirt,
An' hear the trap chains jingle
An' smell the blessed dirt!
I like to hold the handles
Where the hard-head rocks abound.
(There'd be no sport in plowin'
If it wa'n't for stony ground.)
I like to hold em steady
With a grip that's shakin' strong
An' keep my ribs from gettin' sore
With poundin' all day long.
The rocks don't catch my napsin'
For my nerves is all alert—
A feller can't be sleepy
An' smell the blessed dirt!
I like to see the horses sweat,
An' sweat myself as well.
It ain't no harm to horse nor man
So far as I can tell.
An' I like to stop an' rest my team,
An' loosen up their reins,
An' shake 'em up on their belly bands,
An' straighten out their manes,
An' pull their collars forward
If I think their shoulders hurt.
An' sprawl myself upon the ground
An' smell the blessed dirt.
An' when the bell reminds me
That the hour is gettin' late,
I like to drop their traces
An' drive 'em to the gate.
I like to take their bellies off,
An' really I don't think
Of much that I like better
Than to watch my horses drink.
I like to see 'em snort an' blow
An' make the water squirt.
After workin' all the mornin'
Plowin' up the blessed dirt.
The city has no charms for me
That anyways compares
With the joy I got in plowin'
With a spankin' team of mares.
An' when I'm through at evenin'
An' don't up the chores,
I thank the Lord who lets me work
In His big out-of-doors.
The farmer's life's the life for me,
An' freely I assert
The grandest thing about it
Is to plow God's blessed dirt.
—R. S. Clark in "The Holend" (published by the students of the Michigan Agricultural College).

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In This Issue: Co-operation in Live Stock Breeding

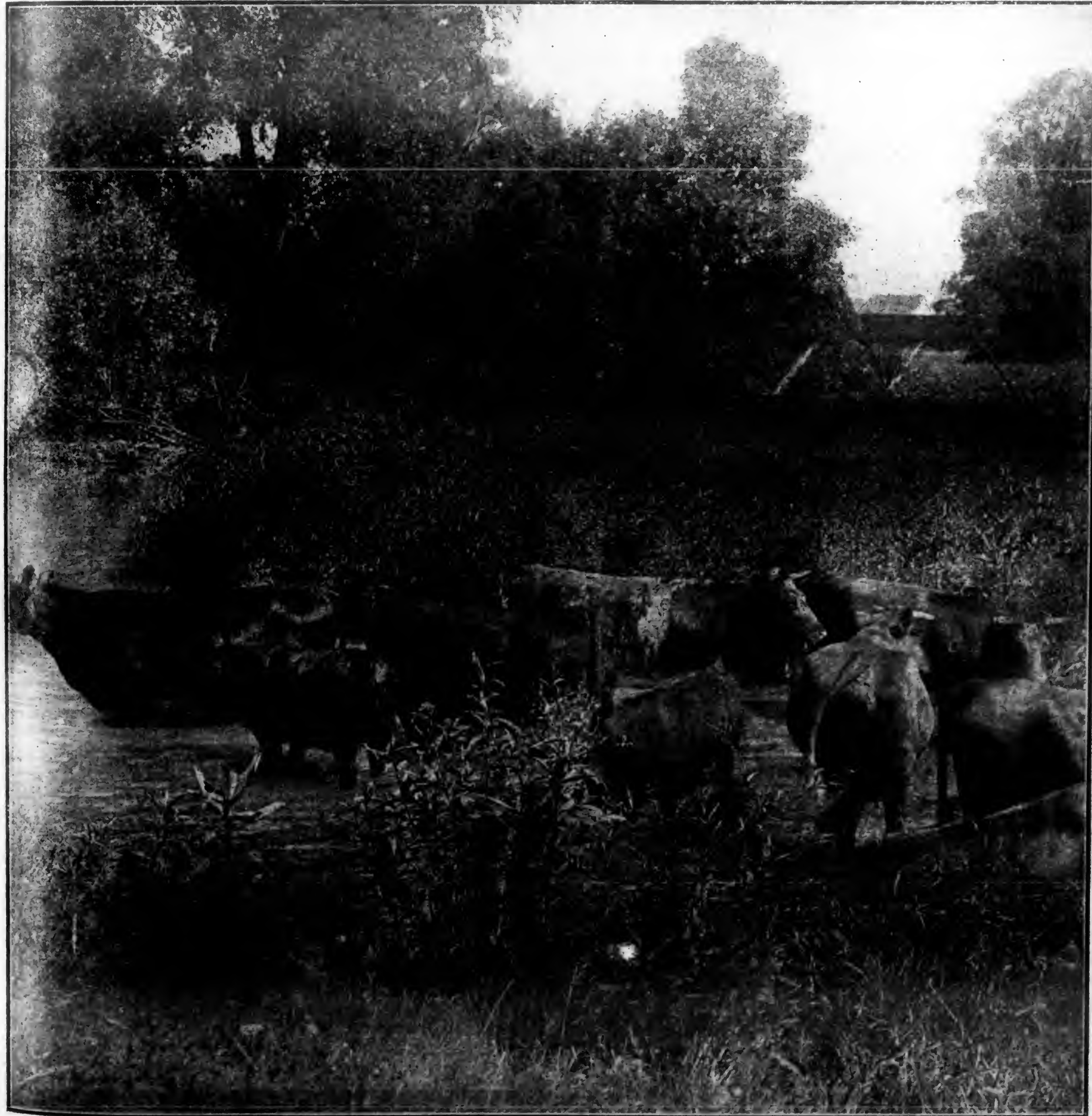
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Canning Soups on the Farm

By MRS. ROLAND MASON

Sometimes it is a very great convenience to the housewife to be able to reach to the shelf for a can of soup, open it, heat it and serve it within a few minutes' time. Those of us who have lived in cities know what it is to have to buy all such things, and we realize what a saving it is, as well as a convenience, to have all such stored away ready for use in winter. Yet, how few farm wives can soups.

This is just the way to transform meat scraps, bones, ligaments and odds and ends of vegetables and cereals into an economical, as well as palatable, soup—something that can be made ready in a few minutes for use as a hot dish.

To make a good soup stock, secure about 15 pounds of beef hocks, joints and bones containing marrow; be sure to strip off all the fat. Crack the bones, then place them in a thin cloth sack and put them in a large kettle containing about 3 gallons of water. Simmer, but do not boil, for six or seven hours, then skim off all the fat from the liquid. Do not salt while simmering. This will fill about ten quart jars or bottles, whichever you prefer to use. After filling the jars or bottles, partially seal and sterilize for about 40 minutes, then seal. The process of sterilizing soup or soup stock is the same as for fruit and vegetables.

VEGETABLE SOUP.—A good vegetable soup may be made as follows: Soak one-quarter of a pound of lima beans and one pound of rice in cold water for 12 hours. Cook one-half pound of barley for two hours. Blanch one pound of carrots, one pound of onions, one-half pound of potatoes and one red pepper for three minutes in boiling water, then quickly dip them in cold water. After this is done, the carrots, onions, potatoes and pepper should all be cut into small cubes and mixed thoroughly with the lima beans and rice, which have been cooked as described above. Fill glass

jars three-fourths full of the above mixture of vegetables and cereals. The next step is to prepare a smooth paste from one-fourth pound of wheat flour blended with two and one-half gallons of soup stock; boil this mixture about three minutes and add about four ounces of salt. Pour this mixture, or stock, over the vegetables until the jars are full. Partially seal the jars and sterilize for about two hours, then seal.

One who has never used the soup made in this way, can have no idea how nice it is, and it is such a convenience in winter.

PEA SOUP.—Soak in water over night four pounds of dried peas. Cook the peas until they are soft, and then mash them fine. Add to the mashed peas two gallons of soup stock and bring the whole to a boil; then pass the liquid through a fine sieve. Make a smooth paste by mixing one-fourth pound of flour and a little water; add one-fourth pound of sugar and two ounces of salt, and add the whole to the peas and soup stock. Cook the whole until the soup begins to thicken just a little, then put in glass jars and partially seal and sterilize two hours, then seal as before directed.

PORK AND BEAN SOUP.—Soak three pounds of beans 12 hours in cold water. Cut two pounds of lean pork in small pieces and put in a thin cloth sack. Place beans, ham and four gallons of water in kettle and boil slowly until beans are very soft. Remove the pork and beans from the liquor and mash the beans fine. Return the pork and mashed beans to the liquor and add two and one-half gallons of soup stock and bring to a boil. Fill into glass jars and partially seal, then sterilize two hours and seal.

Canned soup should be kept in a cool, dark, dry place the same as canned fruit or vegetables.

Virginia.

Utilize the Waste Space

By MRS. E. M. ANDERSON

This is not intended for the farmer with 300 acres of land, one-half of which is idle. If it were, I should make it an ode to the catalpa or some other good forest tree, but when a fruit farm is limited to 5 acres, utility, or perhaps economy, of space is a necessity. By economizing, however, I do not mean running the potato patch across the lawn. My husband and I once drove past a place where the house stood in the center of a good sized potato field without so much as a footpath visible to the naked eye, by which it might be reached in any direction. As it was very evidently inhabited I suppose sufficiently careful observation might have discovered some hidden trail between the rows, but we failed to find any. The space for my lawn shall be sacred to its own purpose. My only objection to using good nut trees for shade would be their slow habit of growth.

To return to the subject of utility, how much good space is often wasted in most farm back yards? In these days we hear much on the subject of making the back yard a place of beauty and none approves more than I, but very few back yards are so exquisite as yet that their beauty would be in any way marred by the addition of a few fruit trees. What is more beautiful, any way, than peach, pear or cherry trees, either covered with bloom or loaded with fruit? My garden adjoins my lawn and both are enclosed by a woven wire fence. Next spring I shall plant grape vines entirely around

my garden so far as the fence extends. This will furnish support and the grapes will take up practically no room that would be used for anything else. My orchard comes close to my garden fence on one side, so that more trees there would be impracticable, but on one end I have a row of young pear trees close beside the fence; on the other end I shall plant quinces, and the remaining side adjoins the lawn so that I want that space reserved for grass or flowers. By the way, my lawn has very few flowers other than roses, and when I buy more they shall be roses, too. Back in the recesses of my brain is a dream of a rose hedge of everblooms like that which C. A. Green describes in the Fruit Grower—but that is wandering from the subject.

Peaches do better here in a protected place than out in the open, so I am planning to tuck several young peach trees into my back yard and in among the out buildings. On a previously unused piece of roadside too narrow for a convenient field crop—just a vacancy where the orchard did not extend out to the road—I have planted red and black raspberries, blackberries, gooseberries and strawberries. The patch has some luxuriant plants and I expect some nice berries next year. We had a few this year.

In these days of wire fences we have very few fence corners, but I do not know many people who are making such careful use of their land that they have not several places where more fruit

might be conveniently planted to become "a thing of beauty and a joy (almost) forever." If it is not needed for the home table—and it usually is—it could be made to add materially to the family income. It is really astonishing how many country people live the year around on less fruit than their city neighbors have, simply because they neglect to raise it and can not buy it when they want it. My husband believed in raising all kinds of fruit, but for home use only, and for him this was all right. He handled dairy farming more successfully, but a woman can not do that very well alone and nothing else seems to me to be quite so well adapted to a widow with small children as the raising of fruit. With a few acres of land so planted that none is idle or wasted, a fair supply of poultry, and a few swarms

of bees, any woman ought to be able to make a fair living, and I believe she could. I want my 5 acres to produce as much as it can for the size of it, anyhow, and am working with that end in view, whether I ever attain it or not.

New York.

Probably few farmers realize fully the danger of allowing weeds to go to seed. When one considers the number of seeds which may be produced by a single plant, ten thousand to one hundred thousand in the case of the Russian thistle, and the number of years during which these seeds may germinate, the danger of allowing any weed to go to seed may be realized. One seeding may contaminate the soil for years to come. This is especially true of the mustards, grasses and all the tumble weeds.



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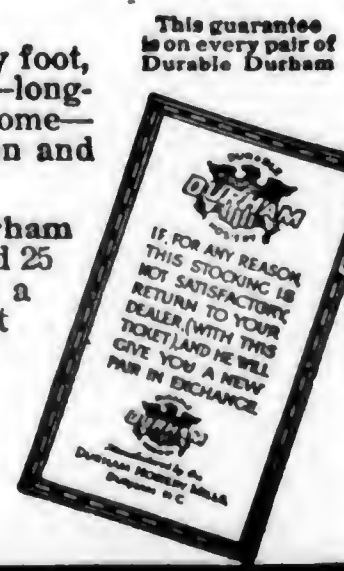
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Co-operation in Live Stock Breeding

By W. H. TOMHAVE

Head of Dept. of Animal Husbandry at Penna. State College

CO-OPERATION in the breeding of live stock is a comparatively new undertaking in many sections of the United States. Where it has been adopted, it has been a decided success and offers many opportunities for systematic improvement of live stock. What co-operation has done to make possible a success along other lines it is capable of doing for the live stock breeding industry. There are a number of factors that make co-operation along this line desirable and all should be carefully considered in starting a movement of this kind. One of the greatest drawbacks to improvement in live stock breeding has been the apparent initial cost of good pure-bred stock, the result of which is that many farmers have continued breeding scrubs and made little or no progress in grading up their herd. This one obstacle is readily overcome by co-operation or community breeding, in that the initial cost of a pure-bred sire will be divided among several farmers, all of whom will have the benefit of this good sire.

The success of the live stock industry of England and Scotland has, in a large measure, been due to the

co-operative tendency among the breeders and farmers in one locality. Certain counties there are noted for the quality and amount of live stock of one kind produced and bred along a particular line for many years. These people have worked together and developed one or two breeds in a community and raised it to a high standard of perfection. Such practice has not only made it possible to produce a large amount of high class stock, but it has been done at the minimum expense to the breeders.

There are similar communities in the United States where such breeding has been practiced and in each case it has done much to develop a certain class of live stock. Lake Mills, Wisconsin, has become known as one of the greatest Holstein centers of the Central West.

Buyers go there from all points of the country to buy Holstein cattle. This place, like others, had a small beginning and developed gradually. Certain sections of Ohio have become noted for one breed of beef cattle. Certain other regions have developed either hogs, sheep or horses.

This system of breeding is not only a great aid in improving the live stock in a locality, but it attracts buyers from a distance who would otherwise not consider coming. When a buyer of pure-bred cattle, hogs, sheep or horses, selects a place to visit with the intention of purchasing a number of animals, he first makes certain that he can visit several breeders of the same kind of stock on the one trip. He is attracted to places where he knows that he can purchase a carload if he so desires. He is willing to pay a higher price for a carload of stock under such conditions as compared to a place where he must spend a considerable amount of time driving about the country and then not getting enough to supply his needs. In such localities he is further assured that much of the stock is bred along similar lines and possesses greater uni-

formity. These conditions not alone attract the buyers of pure-bred live stock, but the dealers in grade stock seek such places because of the presence of high grade animals when good pure-bred sires are used. Co-operation also reduces the cost of advertising, as it is possible to advertise as an association, all members getting the benefit.

Farmers in one locality should plan, so far as it is possible, to decide on one or two breeds of dairy cattle, beef cattle, hogs, sheep or horses, instead of breeding all breeds and not making a success of any. There is not enough difference in the various breeds of live stock to make it impossible for a group of farmers to get together on one breed. It is not advisable to change the breed after it has once been established. Changing of breeds is not conducive to successful breeding when practiced by individuals and less so when done by a group of farmers. Uniformity of type can only be established where the breeding is

of time than where owned by an individual. When organizing a constitution and by-laws are adopted in which the general plan of the club and duties of its members are stated. A committee of two or three farmers should be appointed and delegated to purchase the sires and such other animals as are desired for the club. A maximum price to be paid for such animals is agreed upon at the general meeting and each member is taxed pro rata. The place to keep the sires for each club must be determined by the members. It frequently happens that some member is willing to keep and care for the sire for the privilege of having him on the farm for breeding his stock. Other members should contribute some feed so that the entire cost of keeping will not fall on one person.

The changing of sires from one block to another should be done every two years so as to avoid in-breeding. If there are five sires of one breed in the association they would represent five blocks. The sire of Block No. 1 would be transferred to Block No. 2, and sire from Block No. 5 would come to No. 1.

This would establish a rotation so that each sire could be used until he has passed his stage of usefulness.

Following is a suggested constitution and set of by-laws for a co-operative breeders' association which outlines the purposes and methods of work of such an organization. While local conditions may make it wise to change some of the details, this constitution and by-laws have been worked out by men of experience and will be found to cover the main points in the formation of a community organization. They may be safely used as a ground work for a co-operative movement among live stock breeders. A careful study of them is recommended, and it should encourage community breeding in this section.

CONSTITUTION AND BY-LAWS Of a Cattle Breeders' Association

CONSTITUTION.

ARTICLE I. Name.

The name of this association shall be _____

ARTICLE II. Object.

The object of this association shall be to promote the breeding and improvement of high grade and pure-bred _____ cattle and to aid its members in buying, using and selling first-class animals.

ARTICLE III. Membership.

The membership shall consist of men interested in the object of this association and paying the required annual fee of _____

(Continued on page 345)



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AUGUST 15, 1916

Labor Troubles Threaten Prosperity

IT is unfortunate that just at a time when prosperity looms bright on this country's horizon the dark cloud of labor agitation should appear in our firmament to threaten this prosperity. Just why certain groups of laborers, skilled and unskilled, should consider this a fitting time to threaten strikes unless their demands, many of which are unreasonable, are granted, is hard to understand. Perhaps the idea is that, this country being largely shut off from the importation of foreign products on account of the European war and therefore dependent to a larger measure than ever before on its own resources, a strike will be effective, because of the chance of tying up the last resources from which the consuming public draws its supply of luxuries and necessities, thus bringing about a popular demand for a settling of the difficulties by the granting of the men's demands. We doubt this, as we hardly think that the public's sympathies can be forced in favor of any cause. If the cause is just public sympathy can best be enlisted by an appeal and a statement of facts unaccompanied by a threat to make the innocent suffer in event of a failure to obtain demands.

At this writing there are strikes and rumors of strikes on every hand. The whole country is threatened with a railroad strike by men who say that they can tie up the transportation facilities of the entire country at this critical time, unless given what they ask. A comparison of the wages these men are receiving with the profits we farmers are making and the wages that other walks of life produce would hardly indicate that they are as badly paid as they seem to think; moreover, we are all clamoring for lower freight rates and lower passenger fares and it is hard to understand how the railroads are going to be able to meet these demands and at the same time grant their employees the enormous increases they demand. New York City is suffering from a street railway strike and the employees say that they will tie up the street railway facilities of half the cities of the country in sympathetic strikes unless they obtain the increased wages and other concessions they are after. At this writing a certain group of the employees of the street railways of Philadelphia are threatening to strike, unless their demands are granted within thirty hours. Men already receiving wages almost unheard of until this season in manufacturing plants in which war munitions are produced, are threatening to strike unless paid even more.

Surely this is not the path to prosperity. Men high in the business life of this country are divided as to what will be the business situation in this country when the European war ends—some believe that prosperity will continue, others are of the opinion that depression will follow the end of the war. We believe that this country is at the beginning of an era

of prosperity such as it has never known, but there are ways of heading off such an era and these labor agitators would appear to have found one way. Surely we farmers can have little sympathy with men who threaten our prosperity for the attainment of their own selfish ends.

The Cost of Milk and its Price

MANY complaints are heard from farmers who supply milk for re-sale in the Philadelphia market, that the returns received leave no adequate margin of profit for the producer and in some cases that these returns do not pay the cost of production. Philadelphia milk dealers in turn maintain that they cannot pay the producer more for milk and, after paying the railroad carrier's charges and the cost of sterilizing and handling, have any profit left for themselves at the present price of milk in this city. These same dealers throw much of the blame for the present conditions on the railroads, claiming that the rates charged for bringing milk into Philadelphia are higher than for similar service to any other city in the East.

There would seem to be but two ways out of the difficulty; one to raise the price of milk to the Philadelphia consumer, the other to secure a reduction in carrier charges. Either method would enable the dealer to pay a better price for his milk to the producer. The dealer, however, naturally hesitates to raise the price of milk to his customers, feeling that the blame for the increase would fall entirely on his shoulders and that his customers would raise the cry that he is forcing up the price to increase his profits.

So much has been said about the whole matter that the Philadelphia Chamber of Commerce has determined to hold a hearing on the subject at an early date. At this hearing the producer, the dealer and the railroads will all be asked to state their cases. The dealers and the railroads will readily enough respond and defend their interests, but the fear is expressed that the producers—the farmers—will not come into a hearing of this sort adequately prepared to uphold their own interests by presenting accurate figures as to the cost of milk production. A Chamber official voiced this feeling to the writer recently, and added that he thought very few dairy farmers kept accurate records and actually knew their real cost of production. While this may be so to a certain extent, we feel that in such a statement our farmers are done an injustice, as many of them certainly do keep such records as to be able to state definite costs on short notice.

Those of our readers who are interested in the Philadelphia milk market and can give actual cost figures that will bear investigation, we urge to get in touch with the Philadelphia Chamber of Commerce at the earliest possible moment, so that the Chamber's committee may know on whom to call to represent the producers' interest when the hearing is held.

Those of our readers who are not keeping cost figures are advised to tackle this problem at once, and get in position to defend their own interest in the matter of the price of milk. It is hard to make the consumer believe that he should pay more to increase profits that are already adequate; it is hard to make the railroads believe that they should reduce their carrier charges to increase profits that are already sufficient; but either of these classes will listen to a reasonable argument leading towards the giving of a reasonable profit for labor and capital expended where such profit does not exist. The only way to convince is to present actual figures as to costs and receipts for comparison.

More Sheep Needed

IT is a startling fact that in the past seven years the production of wool in the United States has decreased from 328,000,000 pounds in 1909 to 288,000,000 pounds in 1915 (a decrease of over 12 per cent.), while the population of this country in the same period has increased approximately 20 per cent. The decrease in the production of lamb and mutton corresponds, while the demand in this, the greatest meat eating country on the globe, is continually on the increase. Since this shortage in sheep affects both our food and clothing supply it is a very serious matter. Today we are dependent to a large extent on the foreign markets for our supplies of sheep products and since there is not a sufficient increase in the raising of sheep throughout the world to take care of the increasing world demand, the problem is growing more acute every day.

In this country it is interesting to note how the

sheep raising industry has moved westward with the increases in land values; when land here in the East was relatively low in price, our forefathers raised sheep in plenty; as Eastern population increased and land values multiplied the cheaper lands in the Middle West where the population was lower enabled the farmers of that section to raise sheep at a lower cost and thus Eastern farmers were driven out of this industry; again as land values in the Middle West increased the sheep industry moved westward to sections where vast areas of extremely cheap land afforded cheap pasturage for the flocks, and even free pasturage on adjoining sections of government land. With the low cost of production under these conditions Eastern and even Middle Western farmers could not compete successfully, with the result that flocks of sheep became a rarity in the East and are none too plentiful in many sections of the Middle West. Now, however, conditions have changed; with the increases of values in Western lands and the restrictions on grazing imposed by the government on its land, sheep raising has decreased, while the prices of wool, lamb and mutton have gone up to a point at which sheep raising can be practiced here in the East very profitably.

Under present conditions there are few farms in the East on which a small flock of sheep could not be maintained profitably, and there are many farms which present opportunity for the introduction of large flocks on a money making basis. Throughout the hill and mountain ranges which strike through our Eastern States are thousands of acres now practically unproductive which should be utilized for the purpose of raising sheep. It is high time we Eastern farmers busied ourselves with this problem for the good of our own pocketbooks and the benefit of our country at large—for the need for the food and clothing which sheep produce is universal.

The Philadelphia Wool and Textile Association has launched a campaign to increase sheep raising on Eastern farms. The members of this body have a market for all the wool we Eastern farmers can produce, at prices which should make its production profitable to us. It has collected facts and figures which should be interesting to many of our readers, and we recommend that farmers who would like to consider the sheep raising proposition, write to the Association (No. 135 South Front Street, Philadelphia) for its data. The Practical Farmer believes that this movement is a good one and should do much to increase the productiveness and profits of the farms in this section. We are glad to aid any campaign for the production of "more sheep, more wool and more mutton on Eastern farms."

The Interest in Alfalfa Growing

JUST recently the writer spent several days in Delaware and southern Pennsylvania looking over the alfalfa crop. It was surprising to see how rapidly alfalfa has made for itself a place in the hearts of the farmer. Where three or four years ago the grower cautiously seeded an acre to alfalfa he is now preparing to sow five or six acres. Ten years ago there were very few men in Delaware who even undertook to grow alfalfa; now there are as many growers in a small neighborhood as there were then in the entire state. Some growers now have 20 to 30 acres on the farm and are handling the crop as readily as any other field crop. The success that has attended alfalfa growing in this section has been based upon facts and not luck. Men now realize that it is absolutely necessary to lime and inoculate the soil for alfalfa. Upon these treatments depend quite largely the success of the whole operation. A grower remarked the other day that he considered alfalfa easier to grow than tomatoes and cantaloupes. The supposed mystery attending alfalfa culture is vanishing and farmers are beginning to realize that the growing of the crop is dependent upon the knowledge of certain principles which, coupled with certain practice, will bring the desired results. It is now time to seed alfalfa for the next season. Alfalfa properly seeded this month will give at least two tons of hay per acre by the first of next June. It is a hopeful sign to see the small farmer, trucker and poultryman taking up the culture of alfalfa. There is no forage crop that will meet the varied demands of such a great variety of types of farming. It is also gratifying to note that farmers along with their success with alfalfa are taking a greater interest in keeping live stock, especially dairy cattle. All of this augurs well for greater diversification on the farm and with it more profitable returns.

Forcing Vegetables in Winter

By W. F. MASSEY.

Few people understand the great extent to which greenhouse structures are now devoted to the production of certain vegetable crops in winter and early spring. But the area now devoted to this purpose all through the Lake Shore region is vast and constantly increasing. The principal crops grown are lettuce, cucumbers and tomatoes, though here and there some cauliflowers and melons are grown, but these are on a much smaller scale than the first mentioned crops. The size of the houses devoted to this purpose is surprising to the man who has not kept up with the great development in the building of greenhouses with iron and steel.

At Grand Rapids we visited a greenhouse establishment where we saw one house, built in ridge and furrow fashion and covering 2½ acres of land, and the whole planted in cucumbers trained on trellises. Then around Chicago there are many of these vegetable forcers and very extensive establishments at Toledo, Cleveland, and Ashtabula, Ohio, and at Irondequoit in New York State.

That the business is a success is evidenced by the constantly increasing area in the greenhouse establishments. At one place in Ohio we noted 70 large greenhouses in the establishment of one firm and all devoted to vegetable forcing.

A brick-paved road outside of Cleveland, Ohio, is lined for a long distance with these vegetable growing establishments, all depending mainly on their local market in Cleveland. The great increase in the winter production of vegetables under glass is one great evidence of the increase of wealth in this country, for it is mainly wealthy people who can indulge in these products, for the growers get \$1.50 per dozen in winter for cucumbers at wholesale, and what those who eat them pay can be readily imagined.

Right in competition with the tomatoes from Florida in late winter and spring the superior quality of the tomatoes grown under glass causes them to command a much higher price than the southern hollow and skinny specimens; for a tomato grown under glass is the perfection of a tomato, red and smooth to the stem, solid and less acid than the outdoor fruits, and they are always in demand by people who want the best and are able to pay the price of 25 to 50 cents a pound at retail, and the usual weight of the forced fruit is about three specimens to the pound. Very large tomatoes are not wanted for forcing, since the medium sized ones are more in demand and give larger crops. In the western end of the Lake Shore section the demand is for pink tomatoes, and the gardeners grow the Globe. Eastward there is more demand for red ones, and the Bonny Best is now getting to be the favorite.

Owing to the lack of winter sunlight in the northern Ohio section, the growers arrange their crops to suit their seasons. They do not attempt to grow tomatoes for the New Year market, since tomatoes, to thrive well, must have more sunshine than they have at that season. Their late fall and early winter crops are mainly lettuce.

And with this crop, too, the local market demand and the limitations of climate cause a variation in the kinds grown. In the Ohio section and west-

ward the lettuce demanded is the loose-leaf Grand Rapids, which, grown somewhat crowded, makes long, brittle leaves and is cut and sold by the pound. But as we come eastward the market mainly demands a well headed lettuce, and accordingly the heading varieties take the lead. Especially is this true of the Irondequoit section and the Arlington trucking section near Boston, and the Boston growers have developed varieties especially adapted to heading in heated houses, and some have even undertaken to help out their cloudy weather in winter by running a row of electric arc lights over their houses.

At Cleveland we visited the place of Mr. Rutenik, now the president of the Vegetable Growers' Association of America. He has a place of 12 acres on the brick road, more than half of which is covered with glass. He said that he went there with a capital of \$50 and rented the land he now owns and on

A Farmer Experimenter

By R. E. ALLEN

Two miles out from Kutztown, Berks Co., Pa., lies the farm of Oscar P. Sell, farmer and business man—farmer first and business man afterwards. He has always been a farmer, but from his farm he has obtained the wherewithal to become financially interested in various lines of business in Kutztown.

Ever since the sturdy Pennsylvania Dutch first settled and cleared the land about Kutztown, the Sell homestead has been under cultivation. There are 115 acres in the home farm, but Mr. Sell owns and operates another farm not far away. The entire farm is tilled, except the land about the substantial old buildings in the center of the farm. The fields are so arranged as to require the fewest lanes possible to reach them and every field is cultivated right up to the fence.

It has always been Mr. Sell's custom to grow only a few crops, but to grow those well. Wheat is his main crop and

fields and clean fence rows, and the conspicuous absence of weeds.

Wheat being his main crop, Mr. Sell has made himself somewhat of a specialist at wheat growing. He has made a study of the likes and dislikes of the wheat plant and is thoroughly familiar with all the details that go to make up a good wheat crop.

For the past three years Mr. Sell has been doing some practical experimenting with his wheat. Most of this experimenting has been with the fertilizing of wheat and with the ways and means of escaping damage by the Hessian fly.

This past season, for instance, he took the trouble to fertilize only every other drill width in a large field of wheat. The wheat that was fertilized received 350 to 400 lbs. of a high grade 2½-8-1 fertilizer at the time of seeding. All through the season the difference between the fertilized and unfertilized strips was quite noticeable. As harvest time drew near

the contrast could be observed from a distance and upon closer inspection an even greater contrast could be noticed. It was on the unfertilized strips that lodging was most common, the Hessian fly damage worst, the number of stems per plant fewest and the size of heads smallest.

A like experiment was conducted with a field of oats. Every other drill width received 200 lbs. of the 2½-8-1 goods per acre, while the intervening width received nothing. Fully as great a contrast between the fertilized and unfertilized strips could be noted in the oat field, as in the wheat field.

Past experience with fertilizers enabled Mr. Sell to foresee pretty accurately just what the results of his little experiment would be. Nevertheless, to prove his opinion, he tried the experiment and never again will question the efficiency of fertilizers.

It is on his wheat and oats that Mr. Sell uses most of the 8 tons or more of fertilizer that he buys each year. His corn receives most of the manure that is produced on the farm and it shows it, too. On July 12th Mr. Sell had one of the finest and evenest large fields of corn that the writer had seen up until that time.

All the hay and straw on the Sell farm is made into manure and returned to the land. He says: "I wouldn't sell any straw off my farm at any price." Such is his manuring system. Besides using a lot of manure and fertilizer, Mr. Sell is a heavy user of lime. He makes a practice of applying 100 bushels of 4 tons of burnt lime to every acre every five years. He has his own lime kiln and his own kiln, and so mixes his

(Concluded on page 313)



A Splendid Crop of Timothy and Clover on the Farm of Fred Miller, Geiger's Mills, Berks County, Pa. (Photographed in Early July)

is grown in a rotation with corn, oats and a timothy-clover mixture. He usually has about 45 acres in wheat, 25 in corn, 20 in oats and most of the rest in grass.

"I'm no better than all these other farmers around here," modestly asserts Mr. Sell. "They have just as good farms and raise just as big crops as I do"—all without realizing that the farm on which he stands openly contradicts him.

All over the Sell farm can be seen evidences of careful farming. The big, solid-looking buildings, and all the improved machinery that is stored in them instead of being left out in the weather, speak as eloquently of thrift and good management as do the carefully tilled

ing the wonderful crops they get under great winter difficulties I told the Cleveland growers that if the people on the Delaware-Maryland peninsula ever got the idea of winter forcing, they could beat the Lake Shore people because of the greater amount of winter sunshine and the milder climate, which would make the production more economical.

And now a man from the Arlington gardens near Boston has gone to North Carolina and is growing there in greenhouses and frames, lettuce, cucumbers and tomatoes of the finest quality at the noted winter resort of the golf players

at Pinehurst. There he gets the finest of lettuce with only the glass and no fire heat, and in the heated houses grows tomatoes and cucumbers in excess of the needs of the resort and has to ship north, and is doing it with success.

What is needed in our eastern section is to study the methods that have given men success in a far worse climate than Pennsylvania, New Jersey and Delaware and Maryland. Our truck growers like to get over great areas instead of concentrating capital and energy on smaller ones, and the smaller area often makes the owner more clear money.

THE GARDEN

Edited by W. F. MASSEY

All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

Growing Turnips

I recently mentioned what I called the Long White French turnip, and a correspondent in Virginia wrote that he had applied to the Richmond seedsmen for the seed, and they ridiculed the idea and said there was no such turnip. As I have a package of the seed by me on my desk from a Philadelphia seed house it is evident that the Richmond seedsmen do not know all about turnips. The only difference is that the seedsmen labeled it Large White French instead of Long White French. Southward some call it Rock Turnip.

It is a fine, solid and sweet turnip of the ruta-baga class, and should be sown rather earlier than the strap-leaved varieties. It is now rather too late for it to make its best growth, for I usually sow it in late July, and now am simply waiting for the soil to get fit to work after the deluges of rain we have had for four days.

Middle August is a good time to sow the Early Milan turnip for the earliest fall use, and the regular strap-leaved turnips to succeed them. In sowing turnips I prepare the soil well and then run out furrows two feet apart for garden cultivation, and in these add raw bone meal and nitrate of soda very liberally. Then a furrow is thrown from each side, making a ridge or bed. This is flattened half way and the seed drilled in on the bed.

As the plants develop the rough leaves thinning is needed. Thin them to about 3 inches or more apart, and give the cleanest cultivation. Down here we are fond of the young turnip tops for spring greens, and there is a variety especially adapted to this, known as the Seven-Turnip. It is not valued for its roots, but for the mass of leaves it makes. Being more hardy than most of the turnips it is left where it grew and protected with a mulch of rough manure, and in spring the young leaves are very acceptable as greens, having a peculiar bitterish flavor that distinguishes them from any other greens, and which we like, too.

For the main crop the Purple Top Globe Turnip is large and good, and I also like the Yellow Aberdeen, as it keeps without getting pithy. In colder sections the turnips can be taken up and put in heaps and covered with straw and earth, and will keep well if just protected from hard freezing. The chief manurial demands of the turnip crop are for nitrogen and phosphorus.

Winter Radishes

Our varieties of winter radishes have been greatly improved by the introduction of the newer Chinese and Japanese varieties. The Turnip-Shaped Red Chinese is an improvement on the old Rose Colored Chinese, and the Celestial is a very large white radish. Another large white one is the Japanese Sakurajima. But the old Rose Colored Chinese is still good and very hardy. In North Carolina I have bunched these and sold them from the open ground all winter and found they kept perfectly solid and not pithy. Here in southeastern Maryland they will keep where they grew if a heavy mulch of coarse manure is added. In fact, I had them winter years ago in northern Maryland, where it is as cold as Philadelphia, when the bed developed a mat of chickweed that acted as a protection. The Turnip-Shaped Chinese and

the Celestial can be buried and wintered in the same way as turnips and will keep solid in winter. The Celestial is better boiled than turnips, and will furnish a new dish treated in this way. The roots grow to the size of good sized ruta-baga turnips and are white in color.

Like the spring radishes, the winter radishes need very heavy fertilization, and to be grown rapidly to be good. The main objection to the Japanese Sakurajima is its immense top growth, for the leaves will grow over a foot long and sometimes overgrow the roots, which do not develop as they would with a more moderate growth of tops. I am now using only the Celestial, the Red Turnip-Shaped Chinese and the Rose Colored Chinese. The seed should be sown not later than middle of August. I sow them in the same manner as turnips, on a well fertilized shallow bed or ridge.

Spinach

Spinach is the great crop for greens and the most popular of all. The seed catalogues list several varieties of the smooth seeded kind, and also the prickly seeded sort. Who plants the prickly seed I cannot say, as I have never had any use for it. Some advise the prickly seed for spring sowing, but I have not tried it for many years, and when I did try it found it of no special value as compared with the smooth seeded varieties. It is claimed, however, that it is more hardy than the smooth seeded sorts. But as the smooth seeded spinach is perfectly hardy here and is far better, I do not find any need for the other.

For fall use I sow in August the Norfolk Savoy Leaved spinach. This crop is sown in rows 16 inches apart, and heavily manured, for rapid growth is necessary. Then after the plants have well started I scatter some nitrate of soda alongside the rows to urge a more rapid growth. Then in September I sow seed broadcast and rake it in for wintering over for the spring cutting. In fact, I have done this as late as the first of October here and had the plants winter well. Sown broadcast they winter better than in rows. As the weather gets cold I sprinkle manure over the bed, not thick enough to smother any plants, but thick enough not only to feed the crop, but to act as a winter protection. The plants would winter here all right without it, but the spring growth is much better for the mulch.

Garden Notes

Among the new things I am trying this year the Pimiento pepper is one of the best. The plants are very strong growers, and more prolific than any other large podded sweet pepper. The pods are not so long as the Ruby King pods, but the flesh is thick and entirely free from any hot taste. We have them boiled regularly and I find them very delicious. The green pods are just of a convenient size for stuffing for pickles, and the plants are so prolific that it takes but a few to supply a family.

Of tomatoes, I have grown this summer one new one, the Mississippi Girl. The growth of the vines is remarkably strong and I note that without spraying they are entirely free from leaf blight, while the earlier varieties were badly attacked when not sprayed. This is not an early tomato, but a large and solid one, and seems well suited to the pur-

poses of the canner. I have about concluded to use the Bonny Best only, for the early crop. It is so nearly as early as Earliana that it comes early enough and is a far better tomato. I have tried John Baer two seasons, and while it is certainly a fine tomato, it is not an early one by any means, being two weeks later than Bonny Best under identical treatment.

The Colorado beetles have been worse on the eggplants this season than I have ever known them. It is a daily task, after spraying with lead arsenate, to go over and pick them off by hand, for the heavy rains we have had wash all the poison off as fast as applied, and now I go daily and pick off the mature beetles and brush off the larvae on the hot ground with a whisk broom. With this treatment I have saved the plants.

I find that the best way to treat the overbearing strawberries is to keep them but one season, and plant a new bed every fall. Those I set last fall have done remarkably well. Those set last spring, which gave fruit all last summer from June to October, are not now doing as well and seem crowded and stunted. I will break up this bed and plant a new one this fall.

The Nanticoke blackberry and the Atlantic dewberry are now just ripening and will run all through August. Both are fine berries, but both are terribly thorny. The Nanticoke is good for home use and a home market, but too soft to ship. The Atlantic dewberry is a fine fruit and a good shipper.

Black Valentine beans sown in mid-August will in most seasons make a good crop before frost, and with good pods late in the season they can be canned or packed down in strong brine in stone jars for winter use. Early Horn carrots or the French Forcing carrots will make a crop from August planting. If the late beets were not sown earlier, you can still sow the Egyptian and make a crop.

The Fordhook bush lima beans have made a wonderful crop this season. The large white lima beans seldom make a heavy crop this far south. They are better suited to northern sections. Here and southward, of all the climbing lima beans the small lima or Sleva, the butter bean of the South, is far more prolific, and to my taste is a better bean than the large white lima. The Fordhook belongs to the Potato lima bean, having thick beans rather than large flat ones. It is far better suited to southern conditions than the large white lima bean.

My climbing beans I grow on the woven wire fence that encloses the garden, and thus save poles and space in the garden.

My third setting of tomato plants was made the first of July. These were plants from seed sown in late May, and are for late August and September fruiting, and I hope for a good supply of well grown green ones when frost comes, so that I can pack them away for ripening a few at a time.

Farmers in South Jersey paid over \$2.00 a ton on the average for stable manure this year. Under such circumstances it is most feasible to devote some land for a part of each year to growing crops to be plowed under. The seed for an acre of this crop could be bought or raised for less than the cost of two tons of manure, the New Jersey State Agricultural College points out, and the labor involved is less than for carting and spreading an application of manure. Even though one were forced to forego one short season money crop, as is not often necessary, to provide the time and space for a green manure crop, he would doubtless gain financially in a term of years.

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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

Wheat Growing—Place in Crop Rotation

It is generally admitted that wheat is a less profitable crop than corn in the grain growing states. This is because the overhead charges of seeding and harvesting are somewhat greater with wheat and also the labor of harvesting is not so well distributed as in the case of the corn crop. The greater convertibility of the corn crop, enabling the grower to manufacture it into higher priced products, such as milk and meat is a distinct advantage. There are many ways by which the corn crop may be disposed of aside from that of selling the raw product. Nevertheless wheat will continue to be grown for the reason that some system of crop rotation must be followed and the work of the farm arranged so that it will be more or less distributed throughout the season. Since wheat must necessarily be grown quite widely on certain types of soil the place it occupies in the rotation of crops will determine in no small degree the profitability of the crop. It has been known

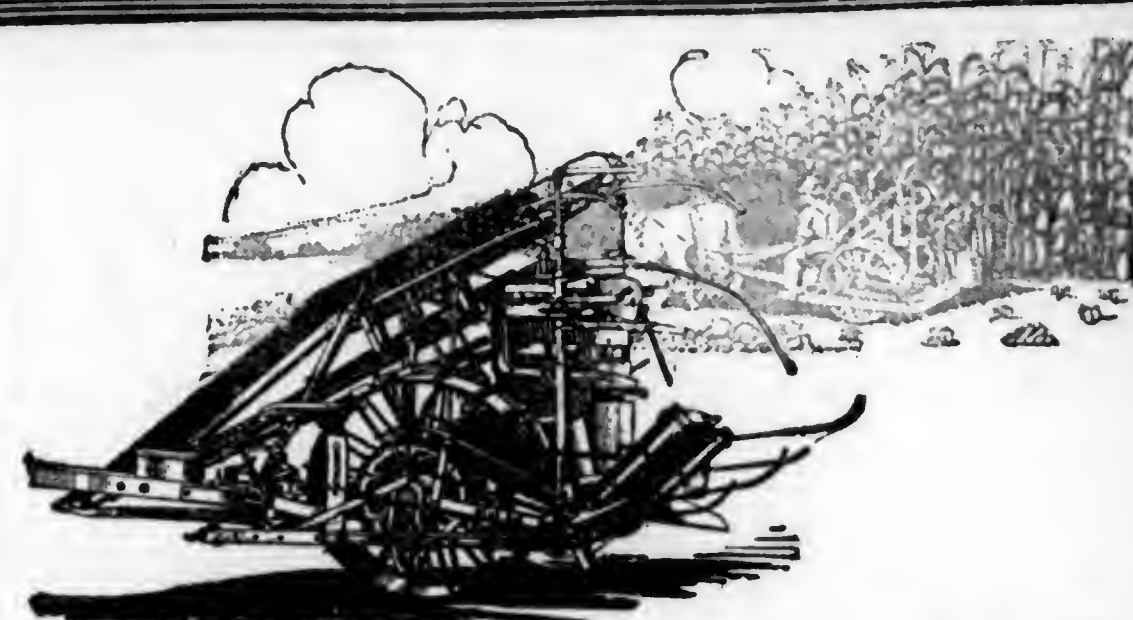
the early spring of the year in which it is to be cut. This will greatly increase the cutting of hay and at the same time produce a heavy sod in which will be held more or less of the insoluble portions of the stable manure. This, when turned for corn, should give excellent results and show also upon the wheat to follow. The clover to follow the wheat will have a much better chance to make a set than where it is sown in the second crop of wheat. In many sections corn is not the most desirable crop for wheat to follow, because of the lateness of maturity in many instances. In the Middle West this difficulty was overcome by seeding the wheat with a 1-horse drill in the standing corn. In wet seasons when the corn was badly blown down this plan did not work. Where wheat must follow corn it would seem desirable to grow a variety of the latter that would mature moderately early, so that the crop might be cut in good time. It is the practice in many sections of the East to plow and



Harvesting a Fine Crop of Wheat on a Long Island Farm

for a long time that the result of growing several cereal crops in succession on the same field is detrimental to the productivity of the soil. And it only requires a few years under such a system to show the effect on the soil. In parts of the Eastern States we find a five-year rotation of corn one year, wheat two years and timothy and clover two years. In most cases the last year of grass is given over to pasture. On ordinary soil and especially where the land is inclined to be thin, such a rotation fails to give the best results for either corn or wheat. The clover upon which is placed the only dependence for improving the soil, has practically disappeared chiefly by timothy. If the land is pastured the second year, as it often is, there is very little good sod to turn for the corn crop. As a result the corn does not benefit as it should, and the two crops of wheat which follow do not have the conditions they should have. At best the growing of two crops of wheat in succession is an expensive method in the long run. It means that the wheat stubble of the first year must be plowed and fitted at a time of the year most arduous on horse and man, and the land rather heavily fertilized in order to keep up the yield. Where corn, wheat and clover are grown it seems best to change the rotation to a three-year system, so that each crop is kept down only one year. The available manure is then applied to the grass in

at the land after the corn is cut. This delays the seeding of wheat too much in most cases, especially if the weather is unsettled. Here is where the disk or double action cutaway harrow is especially valuable. Corn stubble land may be easily and thoroughly prepared for wheat if the disk is used, and much valuable time is saved. Careful tests have shown that as good results can be obtained by this method as by plowing. There are localities in the winter wheat belt where the soil is of such a nature that late plowing causes the wheat to winter-kill easily on account of the unsettled condition of the seedbed. So far as fertility is concerned, following corn with wheat is a logical practice, since the coarser sods and manure which were turned under for corn have become, during the season in which the corn is cultivated, well decayed and in a condition to be more readily utilized by the wheat plant. Yet the irregularity in the time of seeding the wheat where it follows corn has an important bearing on the yield. Late sown wheat does not tiller so freely as where sown at the normal time. However, the more fertile the soil the later the seeding may be made (within limits) and yet get good tillering. Late seeding is about the only way by which to combat the Hessian fly, but in many cases the seedlings are prolonged far beyond that period. If the rotation is plowed for wheat to follow corn, grow wheat but one year on the same land.



How Do You Harvest Your Corn?

UNLESS you use a corn binder, you are not harvesting your corn—that is, not all of it.

Fully a third of the value of the corn crop is in the leaves, husks and stalks. To make full use of this value it is necessary to cut the stalks at just the right time. This cannot be done practically without a corn binder. The loss to American farmers in 1915, through this item alone, is estimated at about three hundred millions of dollars.

Trying to harvest corn without a Deering, McCormick, Milwaukee or Osborne corn binder is just as reasonable as trying to harvest grain with a cradle. It can be done, but American farmers prefer the binder. When you consider that one man with an I H C corn binder can go into a field of corn in almost any condition and cut and bind the crop, from five to eight acres every day, you will see why we are selling more and more corn binders every year.

For every bushel of corn you put in your crib by the old-fashioned corn knife way, you are wasting the value of half a bushel in the feeding value of the stalks and leaves. Think it over. Drop in and see the I H C local dealers or write us for complete information.

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Win Against the Hessian Fly

TO Escape the Main Attack of the Fly

—sow your wheat late. The early brood is most destructive to young wheat and provides for future broods. Your own Experiment Station will tell you this.

THE Best Wheat Yields come from plants that enter the winter strong and vigorous. Your own experience will tell you this.

TO Win Against the Fly, seed late, feed

the crop with available fertilizers which will hasten growth to overcome the late start, and secure vigor with consequent resistance to later broods. Use 200 to 400 pounds per acre containing at least 2 percent ammonia. Acid phosphate does not give the necessary quick growth and resistance to the fly.

In Farmers' Bulletin No. 640, U. S. Department of Agriculture, fertilizers are recommended to give vigor to late sown crops and resistance to the Hessian Fly.

Write for our map showing best dates for sowing wheat in your locality; also our Bulletin, "WHEAT PRODUCTION," both mailed free.

Soil Improvement Committee

OF THE

National Fertilizer Association

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Then try to arrange the removal of the corn so that the land may be fitted early enough to give the wheat a good start in the fall. If only a moderate acreage of wheat is desired in proportion to other crops, some of the canning crops, such as sweet corn and tomatoes, or even early potatoes, may be followed with wheat to better advantage as to earliness of seeding than field corn. The clean culture which accompanies the growing of early potatoes and sweet corn puts the land in a condition to grow splendid wheat. Such an arrangement of crops does away with the necessity for plowing the land for wheat as the disk will put the land in excellent shape. As the writer sees the problem of wheat growing in the Eastern States the key to better yields is an arrangement of crops in the rotation so that the wheat may be seeded at the normal time and on a soil that is fertile enough to bring good yields even if seeding must in cases be delayed. The proper crop rotation will do much toward improving the fertility of the land and as well the distribution of labor so that the wheat may be seeded at the proper time. The three-year rotation of corn, wheat and grass (clover and timothy) is good, but has the drawback of the uncertainty of the removal of the corn crop. Where some variety of crops may be grown profitably the following rotation may be suggestive. First year, corn, seeded to crimson clover at the last cultivation; second year, clover turned and the field disked for soy beans, sweet corn or early potatoes. All of these crops may be removed in good time for seeding to wheat and with less labor than plowing after corn. Fourth year, red clover and timothy. The second crop of wheat, now so commonly grown in the rotations found in Delaware and Maryland, should be dropped. It would be far better for the land to grow two crops of corn in succession on the same field than wheat. Thus the first year of corn is seeded to crimson clover and this turned under for the second crop, which is then followed by wheat and finally the fourth year by clover and timothy. Judicious fertilization is necessary on most soils, but the advantages to be derived from the proper crop rotation are much greater than are generally suspected. Wheat is a crop which must pass the winter shortly after it begins its life history. Thus it is subject to very trying conditions and should be given every advantage that time of seeding, fertility of the soil and variety may combine.

Cover Crops and Prosperity

Few farmers realize the value of cover crops. A good many know that it is well to have the land covered in winter time to prevent erosion, and that if plowed down in the spring a great deal of value will be obtained from the resulting humus. But there are even more important advantages to be considered, and every man who tills the land should be familiar with them.

Of the ten indispensable elements which the plant requires, three may be lacking or deficient in many soils—nitrogen, phosphoric acid and potash. Of these, nitrogen is by far the most important, not only because it is more often lacking and costs more than the others, but also because it is the most easily lost to the soil. Hence a most important part of every farmer's duty is to keep his nitrogen supply constant in the cheapest possible way.

If it were possible to keep nitrogen in the soil indefinitely, it might pay to buy a stock every ten years or so. But since this is impossible, no farmer can afford to buy this nitrogen annually, especially

since he has the power to grow it at much less cost. It has been well said that "the future of American farming depends upon the free use of legumes." The legumes, with their infinite power of gathering nitrogen from the air and chemically changing it into the form which is needed by all plants, is the best friend that a farmer can have. Where the legumes grow as weeds—that farm is prosperous.

In order to grow legumes successfully it is necessary to inoculate the seed with the particular bacteria which is essential to the plant's development. The most convenient way to do this is to inoculate the seed before it is sown, by simply mixing with the seed a culture of the desired bacteria. It pays to grow the legumes carefully.

Queries Answered

Clover and Timothy.—C. G. L., Pennsylvania, writes: "Would you advise sowing both clover and timothy in August in a corn field at that cultivation, or only clover, and timothy in the spring?"

In some instances very good catches of grass are secured by seeding both clover and timothy and clover in corn in the late summer. However, the uncertainties of rainfall may cause failure. If you sow a single crop use the timothy, and seed the clover in the spring. If the land is clean and in a good state of fertility you have a fair chance of securing a stand of both clover and timothy by seeding at the last cultivation.

The Hessian Fly

Quick-acting Fertilizers
A Preventive Measure

You can beat the Hessian Fly with Fertilizers if you use the right kind. The idea is to seed late and force the fall growth with fertilizer containing at least 2% quickly available ammonia and not less than 10% available phosphoric acid. But it must be the right kind of fertilizer. We make it. Acid phosphate alone will not bring the quick growing effect. One more bushel of wheat per acre will pay for the ammonia and may save you many bushels if the fly is present. If there is no fly, the fertilizer will repay its cost anyhow in the wheat crop.

Ask us for Government chart showing best dates for seeding in your section. Also for new booklet "How to Get a Crop of Wheat," both mailed free. With the shortage of labor this year, you want to make your own work produce to the limit. Our active fertilizers will help.

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Please refer to your August 1st copy of "The Practical Farmer," and note particularly the excellent fields of Wheat and Timothy reproduced on the front cover. All of these crops were grown exclusively on E. FRANK COE'S fertilizer.

To assist our friends in getting the greatest possible returns from their Wheat crop, we have prepared a booklet entitled, "Winter Wheat," and will be glad to send you a copy with our compliments if you mention this paper.

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Seed Wheat Several varieties seed early. Write for circular. O. A. Reed, Charlotte, N.C.

HORTICULTURAL

Edited by C. A. McCUE

The Cost of a Peach Orchard

The Delaware Agricultural Experiment Station has just issued a bulletin setting forth a financial statement of the Station peach orchard. This orchard consists of about 9½ acres of Elberta and Belle of Georgia peaches. The orchard has been used for experimental purposes and the receipts are only an incidental feature of its management. The trees were planted in the spring of 1908 and the report reviews the orchard operations, costs and receipts up to Oct. 1, 1915. Only four crops have been harvested during this eight-year period.

The first year the orchard was set a crop of field corn was grown in the orchard and the value of the corn crop was subtracted from the year's cost, leaving a cost for the first year of 6.1 cents per tree. The second year the cost was 16.44 cents per tree, the third year 21.55 cents per tree, the fourth year 28.97 cents per tree, the fifth year \$1.14 per tree; the sixth year the cost was 56 cents per tree with a return in fruit of \$1.05 per tree. The seventh year the expenses were \$1.24½ per tree, with a return of \$2.70 per tree. The eighth, and last, year the cost was \$1.40 per tree, with an income in fruit to the value of \$2.46 per tree. The total cost for the 9.56 acres for eight years was \$4890.91, with a receipt in fruit to the value of \$7599.29.

During this time there have been picked and sold 13,596 baskets of peaches and 2437 baskets of dropped or windfall peaches were marketed. The average selling price of picked fruit was 51.55 cents per basket, and for dropped fruit 24.2 cents per basket.

The four-year average of production has been 4.13 baskets per tree of Elberta and 4.01 baskets per tree of Belle of Georgia.

Considering the land worth \$100 per acre at the start, and compounding all the investment at 5 per cent. compound interest, it was found that at the end of the sixth year the orchard still owed the Station \$209.65. Large crops were harvested and sold during the seventh and eighth years, so that at the end of the eighth year the orchard showed a profit of \$2280.52, or a yearly average profit for the eight years of \$29.81 per acre. This amount represents a return of 5 per cent. on a valuation of \$596.20 per acre.

The itemized cost of producing a basket of peaches was as follows:

Interest on investment	Cts. per bas.
Interest on machinery equipment	2.963
Pruning and hauling brush	2.9567
Labor of spraying	3.1768
Spray chemicals	1.7421
Cultivation and sowing cover crops	2.5684
Mixing and applying fertilizers	.4727
Fertilizers	2.8371
Cover crop seed	.5432
Worming and summer pruning	1.4288
Harvesting labor	4.8045
Package	6.5292
Hauling	1.466
Time on repairs to tools	.2353
Repairing broken trees	.0355
Freight bills	1.5750
Pruning and thinning	.3285
Lime and cost of applying	.0545
Hoing	.1094
Cost of trees	.2577
Preparation of land for planting	.2494
Staking	.0484
Planting	.0191
Total	24.472

The profit per basket was 12.92 cents. Undoubtedly if the orchard had been

handled as a commercial orchard and not as a strictly experimental one, the profits would have been greater. The record of this orchard shows that peach growing can be made a remunerative business, yet peach growing is not a "get-rich-quick" proposition. To make a peach orchard return a high interest on the investment requires a thorough knowledge of the peach crop, good judgment and skillful handling.

Packing Fruit

More and more attention is being paid each year to better packing of all kinds of fruit. Competition is becoming so keen that the kind of pack often decides the selling price of fruit. This is especially true of peaches. The old 16-quart Delaware basket is doomed as a general market package and the six-basket carrier will probably be the peach package of the future in the East. In the Middle West and North the bushel basket has a firm hold upon the public, but is doubtful if it can successfully compete with the six-basket carrier. For many years the six-basket carrier of peaches has been packed according to what is known as the Georgia pack. In the pack a smaller peach is used for the bottom layer than is used for the top layer. That is to say, the peaches do not run uniform as to size throughout the package. Recently the market has come to know the "Jersey pack," which is similar in many respects to the Georgia pack, but the peaches run uniform to size throughout the package. In case of close competition and dull markets it is probable that the Jersey pack will over-sell the Georgia pack. Delaware, Maryland and New Jersey growers are strongly advised to abandon the Georgia pack and adopt the New Jersey pack. The New Jersey pack has been amply described in a recent New Jersey bulletin. The Delaware Station has adopted the Jersey pack as a standard, and has had several hundred leaflets describing the Jersey pack printed for distribution to peach growers.

Many states are awaking to the reality of dishonest, and in many cases real dishonest, practices in packs of apples in barrels. New York growers in particular had made an unenviable reputation along this line. The result was, the New York apple packing law, which is being either adopted or revised by many other apple growing states.

There is no reason why a barrel pack of apples cannot be as reliable as a box pack.

Grading is one of the prime essentials to good fruit packing, and without good honest grading any pack is doomed to failure. Manufacturers of foodstuffs are constantly striving to put up their goods in a style that is attractive to the buyer. The fruit growers of the country can well take a lesson from their results.

The packing season for apples and peaches is now approaching and it behooves every grower who has or hopes to maintain a reputation for his products to open his eyes to the possibilities of good fruit packs and attractive packages.

Queries Answered

Rot in Grapes.—A. J., Georgia, writes: "This season our grapes have all rotted on the vine. They look as though they were of a brown variety and not decayed in the least, and hang in great clusters this way. The rot seems, thus far, to be worse in the white grapes than any other. What can be done to prevent this rot?"

The trouble with your grapes is what is known as brown rot. This disease, while very destructive to grapes, is one that can be quite readily held in check

by proper spraying. Unfortunately there is nothing that can be done to save this year's crop, but, by the following method of procedure, the trouble can be avoided next year.

I am unable to tell from your letter if your grapes are Scuppernon or the ordinary American grape as it is grown in the North. If the latter, prune them quite heavily this winter and burn all the prunings. The Scuppernon will not stand such severe pruning. Next spring, no matter what the type of grape, spray them with Bordeaux mixture when the young shoots are a few inches long. Repeat this spray about every two weeks until the grapes are half grown. If you find any rot after that period, spray with a pound of acetate of copper to 50 gallons of water. This last spray will avoid staining the fruit. If you are troubled with any insects eating either fruit or foliage, put a couple of pounds of arsenate of lead into every 50 gallons of the spray. In using Bordeaux mixture always use 4 pounds of copper sulphate and 5 pounds of lime to every 50 gallons of water. Stone lime is best, although hydrated lime will make a very good Bordeaux. C. A. M.

A Farmer Experimenter

(Continued from page 309)

fields at small cost. He believes in keeping the soil sweet at almost any cost.

Mr. Sell has finished his experiments with control measures against the Hessian fly. Briefly stated, his results have proved to him that the fertilizer he uses on his wheat not only makes better wheat and more of it, but also, that the fertilizer remarkably reduces or nearly eliminates all Hessian fly damage.

Three years ago Mr. Sell had one of his hands put some chicken manure on some of the thin places in the wheat field. Normally the Hessian fly is quite bad in this community, but when harvest time came that year Mr. Sell was surprised to see that in addition to being better wheat, the wheat on the manured places was practically undamaged by the fly.

"If chicken manure will prevent fly damage," reasoned Mr. Sell, "why won't fertilizer do the same thing. I'm going to try it and see."

He did try fertilizer the next year and obtained the same results that he had from the chicken manure, except that these results were on a much larger scale. So far as he was concerned, the Hessian fly was conquered. The surprising results of the control of the fly by means of fertilizer has made Mr. Sell quite positive of his future freedom from bad fly damage.

"I don't care if the fly is bad," he says, "I can take a field and prepare it good, and use plenty of fertilizer and lime, and I won't be bothered by the fly. If I don't use the fertilizer the fly gets me, sure. There's not much use trying to grow good wheat any more around here unless you do use fertilizer. I know that because I've proved it right here."

There is no question but that Mr. Sell has opened up new possibilities of wheat growing in fly-infested regions. The fertilizer treatment, together with the late sowing commonly practiced, is now recognized by the U. S. Department of Agriculture as a means of fighting the Hessian fly. A fertilizer containing ammonia must be used. This gives a quick growth in the fall and helps to overcome the bad effects of late planting. Then the fertilized wheat will stool out and make more stems than will wheat not so well nourished. This gives added protection against the fly.

Mr. Sell in his experimenting made observations and practical applications several years ago of a principle which is only now winning general recognition. When generally adopted this treatment will mean a tremendous total saving of losses now caused by the attacks of the Hessian fly.

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Prices are just. It will cost you 25c to 30c per acre to change seed, including bags and in most cases freight.

Seed must please you. If it don't you return it at our expense for freight and we return your money.

The head of wheat shown here is "Lange's Profile." This variety is yielding 35 to 40 bushels per acre. We would like to send you a sample, with "Hoffman's Wheat Catalog"—both free, if you tell where you saw our advertisement.

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AUGUST 15, 1916

Labor Troubles Threaten Prosperity

It is unfortunate that just at a time when prosperity looms bright on this country's horizon the dark cloud of labor agitation should appear in our firmament to threaten this prosperity. Just why certain groups of laborers, skilled and unskilled, should consider this a fitting time to threaten strikes unless their demands, many of which are unreasonable, are granted, is hard to understand. Perhaps the idea is that, this country being largely shut off from the importation of foreign products on account of the European war and therefore dependent to a larger measure than ever before on its own resources, a strike will be effective, because of the chance of tying up the last resources from which the consuming public draws its supply of luxuries and necessities, thus bringing about a popular demand for a settling of the difficulties by the granting of the men's demands. We doubt this, as we hardly think that the public's sympathies can be forced in favor of any cause. If the cause is just public sympathy can best be enlisted by an appeal and a statement of facts unaccompanied by a threat to make the innocent suffer in event of a failure to obtain demands.

At this writing there are strikes and rumors of strikes on every hand. The whole country is threatened with a railroad strike by men who say that they can tie up the transportation facilities of the entire country at this critical time, unless given what they ask. A comparison of the wages these men are receiving with the profits we farmers are making and the wages that other walks of life produce would hardly indicate that they are as badly paid as they seem to think; moreover, we are all clamoring for lower freight rates and lower passenger fares and it is hard to understand how the railroads are going to be able to meet these demands and at the same time grant their employees the enormous increases they demand. New York City is suffering from a street railway strike and the employees say that they will tie up the street railway facilities of half the cities of the country in sympathetic strikes unless they obtain the increased wages and other concessions they are after. At this writing a certain group of the employees of the street railways of Philadelphia are threatening to strike, unless their demands are granted within thirty hours. Men already receiving wages almost unheard of until this season in manufacturing plants in which war munitions are produced, are threatening to strike unless paid even more.

Surely this is not the path to prosperity. Men high in the business life of this country are divided as to what will be the business situation in this country when the European war ends—some believe that prosperity will continue, others are of the opinion that depression will follow the end of the war. We believe that this country is at the beginning of an era

of prosperity such as it has never known, but there are ways of heading off such an era and these labor agitators would appear to have found one way. Surely we farmers can have little sympathy with men who threaten our prosperity for the attainment of their own selfish ends.

The Cost of Milk and its Price

Many complaints are heard from farmers who supply milk for re-sale in the Philadelphia market, that the returns received leave no adequate margin of profit for the producer and in some cases that these returns do not pay the cost of production. Philadelphia milk dealers in turn maintain that they cannot pay the producer more for milk and, after paying the railroad carrier's charges and the cost of sterilizing and handling, have any profit left for themselves at the present price of milk in this city. These same dealers throw much of the blame for the present conditions on the railroads, claiming that the rates charged for bringing milk into Philadelphia are higher than for similar service to any other city in the East.

There would seem to be but two ways out of the difficulty; one to raise the price of milk to the Philadelphia consumer, the other to secure a reduction in carrier charges. Either method would enable the dealer to pay a better price for his milk to the producer. The dealer, however, naturally hesitates to raise the price of milk to his customers, feeling that the blame for the increase would fall entirely on his shoulders and that his customers would raise the cry that he is forcing up the price to increase his profits.

So much has been said about the whole matter that the Philadelphia Chamber of Commerce has determined to hold a hearing on the subject at an early date. At this hearing the producer, the dealer and the railroads will all be asked to state their cases. The dealers and the railroads will readily enough respond and defend their interests, but the fear is expressed that the producers—the farmers—will not come into a hearing of this sort adequately prepared to uphold their own interests by presenting accurate figures as to the cost of milk production. A Chamber official voiced this feeling to the writer recently, and added that he thought very few dairy farmers kept accurate records and actually knew their real cost of production. While this may be so to a certain extent, we feel that in such a statement our farmers are done an injustice, as many of them certainly do keep such records as to be able to state definite costs on short notice.

Those of our readers who are interested in the Philadelphia milk market and can give actual cost figures that will bear investigation, we urge to get in touch with the Philadelphia Chamber of Commerce at the earliest possible moment, so that the Chamber's committee may know on whom to call to represent the producers' interest when the hearing is held.

Those of our readers who are not keeping cost figures are advised to tackle this problem at once, and get in position to defend their own interest in the matter of the price of milk. It is hard to make the consumer believe that he should pay more to increase profits that are already adequate; it is hard to make the railroads believe that they should reduce their carrier charges to increase profits that are already sufficient; but either of these classes will listen to a reasonable argument leading towards the giving of a reasonable profit for labor and capital expended where such profit does not exist. The only way to convince is to present actual figures as to costs and receipts for comparison.

More Sheep Needed

It is a startling fact that in the past seven years the production of wool in the United States has decreased from 328,000,000 pounds in 1909 to 288,000,000 pounds in 1915 (a decrease of over 12 per cent.), while the population of this country in the same period has increased approximately 20 per cent. The decrease in the production of lamb and mutton corresponds, while the demand in this, the greatest meat eating country on the globe, is continually on the increase. Since this shortage in sheep affects both our food and clothing supply it is a very serious matter. Today we are dependent to a large extent on the foreign markets for our supplies of sheep products and since there is not a sufficient increase in the raising of sheep throughout the world to take care of the increasing world demand, the problem is growing more acute every day.

In this country it is interesting to note how the

sheep raising industry has moved westward with the increases in land values; when land here in the East was relatively low in price, our forefathers raised sheep in plenty; as Eastern population increased and land values multiplied the cheaper lands in the Middle West where the population was lower enabled the farmers of that section to raise sheep at a lower cost and thus Eastern farmers were driven out of this industry; again as land values in the Middle West increased the sheep industry moved westward to sections where vast areas of extremely cheap land afforded cheap pasturage for the flocks, and even free pasturage on adjoining sections of government land. With the low cost of production under these conditions Eastern and even Middle Western farmers could not compete successfully, with the result that flocks of sheep became a rarity in the East and are none too plentiful in many sections of the Middle West. Now, however, conditions have changed; with the increases of values in Western lands and the restrictions on grazing imposed by the government on its land, sheep raising has decreased, while the prices of wool, lamb and mutton have gone up to a point at which sheep raising can be practiced here in the East very profitably.

Under present conditions there are few farms in the East on which a small flock of sheep could not be maintained profitably, and there are many farms which present opportunity for the introduction of large flocks on a money making basis. Throughout the hill and mountain ranges which strike through our Eastern States are thousands of acres now practically unproductive which should be utilized for the purpose of raising sheep. It is high time we Eastern farmers busied ourselves with this problem for the good of our own pocketbooks and the benefit of our country at large—for the need for the food and clothing which sheep produce is universal.

The Philadelphia Wool and Textile Association has launched a campaign to increase sheep raising on Eastern farms. The members of this body have a market for all the wool we Eastern farmers can produce, at prices which should make its production profitable to us. It has collected facts and figures which should be interesting to many of our readers, and we recommend that farmers who would like to consider the sheep raising proposition, write to the Association (No. 135 South Front Street, Philadelphia) for its data. The Practical Farmer believes that this movement is a good one and should do much to increase the productiveness and profits of the farms in this section. We are glad to aid any campaign for the production of "more sheep, more wool and more mutton on Eastern farms."

The Interest in Alfalfa Growing

Just recently the writer spent several days in Delaware and southern Pennsylvania looking over the alfalfa crop. It was surprising to see how rapidly alfalfa has made for itself a place in the hearts of the farmer. Where three or four years ago the grower cautiously seeded an acre to alfalfa he is now preparing to sow five or six acres. Ten years ago there were very few men in Delaware who even undertook to grow alfalfa; now there are as many growers in a small neighborhood as there were then in the entire state. Some growers now have 20 to 30 acres on the farm and are handling the crop as readily as any other field crop. The success that has attended alfalfa growing in this section has been based upon facts and not luck. Men now realize that it is absolutely necessary to lime and inoculate the soil for alfalfa. Upon these treatments depend quite largely the success of the whole operation. A grower remarked the other day that he considered alfalfa easier to grow than tomatoes and cantaloupes. The supposed mystery attending alfalfa culture is vanishing and farmers are beginning to realize that the growing of the crop is dependent upon the knowledge of certain principles which, coupled with certain practice, will bring the desired results. It is now time to seed alfalfa for the next season. Alfalfa properly seeded this month will give at least two tons of hay per acre by the first of next June. It is a hopeful sign to see the small farmer, trucker and poultryman taking up the culture of alfalfa. There is no forage crop that will meet the varied demands of such a great variety of types of farming. It is also gratifying to note that farmers along with their success with alfalfa are taking a greater interest in keeping live stock, especially dairy cattle. All of this augurs well for greater diversification on the farm and with it more profitable returns.

Forcing Vegetables in Winter

By W. F. MASSEY.

Few people understand the great extent to which greenhouse structures are now devoted to the production of certain vegetable crops in winter and early spring. But the area now devoted to this purpose all through the Lake Shore region is vast and constantly increasing. The principal crops grown are lettuce, cucumbers and tomatoes, though here and there some cauliflowers and melons are grown, but these are on a much smaller scale than the first mentioned crops. The size of the houses devoted to this purpose is surprising to the man who has not kept up with the great development in the building of greenhouses with iron and steel.

At Grand Rapids we visited a greenhouse establishment where we saw one house, built in ridge and furrow fashion and covering 2½ acres of land, and the whole planted in cucumbers trained on trellises. Then around Chicago there are many of these vegetable forcers and very extensive establishments at Toledo, Cleveland, and Ashtabula, Ohio, and at Irondequoit in New York State.

That the business is a success is evidenced by the constantly increasing area in the greenhouse establishments. At one place in Ohio we noted 70 large greenhouses in the establishment of one firm and all devoted to vegetable forcing.

A brick-paved road outside of Cleveland, Ohio, is lined for a long distance with these vegetable growing establishments, all depending mainly on their local market in Cleveland. The great increase in the winter production of vegetables under glass is one great evidence of the increase of wealth in this country, for it is mainly wealthy people who can indulge in these products, for the growers get \$1.50 per dozen in winter for cucumbers at wholesale, and what those who eat them pay can be readily imagined.

Right in competition with the tomatoes from Florida in late winter and spring the superior quality of the tomatoes grown under glass causes them to command a much higher price than the southern hollow and skinny specimens; for, a tomato grown under glass is the perfection of a tomato, red and smooth to the stem, solid and less acid than the outdoor fruits, and they are always in demand by people who want the best and are able to pay the price of 25 to 50 cents a pound at retail, and the usual weight of the forced fruit is about three specimens to the pound. Very large tomatoes are not wanted for forcing, since the medium sized ones are more in demand and give larger crops. In the western end of the Lake Shore section the demand is for pink tomatoes, and the gardeners grow the Globe. Eastward there is more demand for red ones, and the Bonny Best is now getting to be the favorite.

Owing to the lack of winter sunlight in the northern Ohio section, the growers arrange their crops to suit their seasons. They do not attempt to grow tomatoes for the New Year market, since tomatoes, to thrive well, must have more sunshine than they have at that season. Their late fall and early winter crops are mainly lettuce.

And with this crop, too, the local market demand and the limitations of climate cause a variation in the kinds grown. In the Ohio section and west-

ward the lettuce demanded is the loose-leaf Grand Rapids, which, grown somewhat crowded, makes long, brittle leaves and is cut and sold by the pound. But as we come eastward the market mainly demands a well headed lettuce, and accordingly the heading varieties take the lead. Especially is this true of the Irondequoit section and the Arlington trucking section near Boston, and the Boston growers have developed varieties especially adapted to heading in heated houses, and some have even undertaken to help out their cloudy weather in winter by running a row of electric arc lights over their houses.

At Cleveland we visited the place of Mr. Rutenik, now the president of the Vegetable Growers' Association of America. He has a place of 12 acres on the brick road, more than half of which is covered with glass. He said that he went there with a capital of \$50 and rented the land he now owns and on

A Farmer Experimenter

By R. E. ALLEN

Two miles out from Kutztown, Berks Co., Pa., lies the farm of Oscar P. Sell, farmer and business man—farmer first and business man afterwards. He has always been a farmer, but from his farm he has obtained the wherewithal to become financially interested in various lines of business in Kutztown.

Ever since the sturdy Pennsylvania Dutch first settled and cleared the land about Kutztown, the Sell homestead has been under cultivation. There are 115 acres in the home farm, but Mr. Sell owns and operates another farm not far away. The entire farm is tilled, except the land about the substantial old buildings in the center of the farm. The fields are so arranged as to require the fewest lanes possible to reach them and every field is cultivated right up to the fence.

It has always been Mr. Sell's custom to grow only a few crops, but to grow those well. Wheat is his main crop and

fields and clean fence rows, and the conspicuous absence of weeds.

Wheat being his main crop, Mr. Sell has made himself somewhat of a specialist at wheat growing. He has made a study of the likes and dislikes of the wheat plant and is thoroughly familiar with all the details that go to make up a good wheat crop.

For the past three years Mr. Sell has been doing some practical experimenting with his wheat. Most of this experimenting has been with the fertilizing of wheat and with the ways and means of escaping damage by the Hessian fly.

This past season, for instance, he took the trouble to fertilize only every other drill width in a large field of wheat. The wheat that was fertilized received 350 to 400 lbs. of a high grade 2½-8-1 fertilizer at the time of seeding. All through the season the difference between the fertilized and unfertilized strips was quite noticeable. As harvest time drew near the contrast could be observed from a distance and upon closer inspection an even greater contrast could be noticed. It was on the unfertilized strips that lodging was most common, the Hessian fly damage worst, the number of stems per plant fewest and the size of heads smallest.

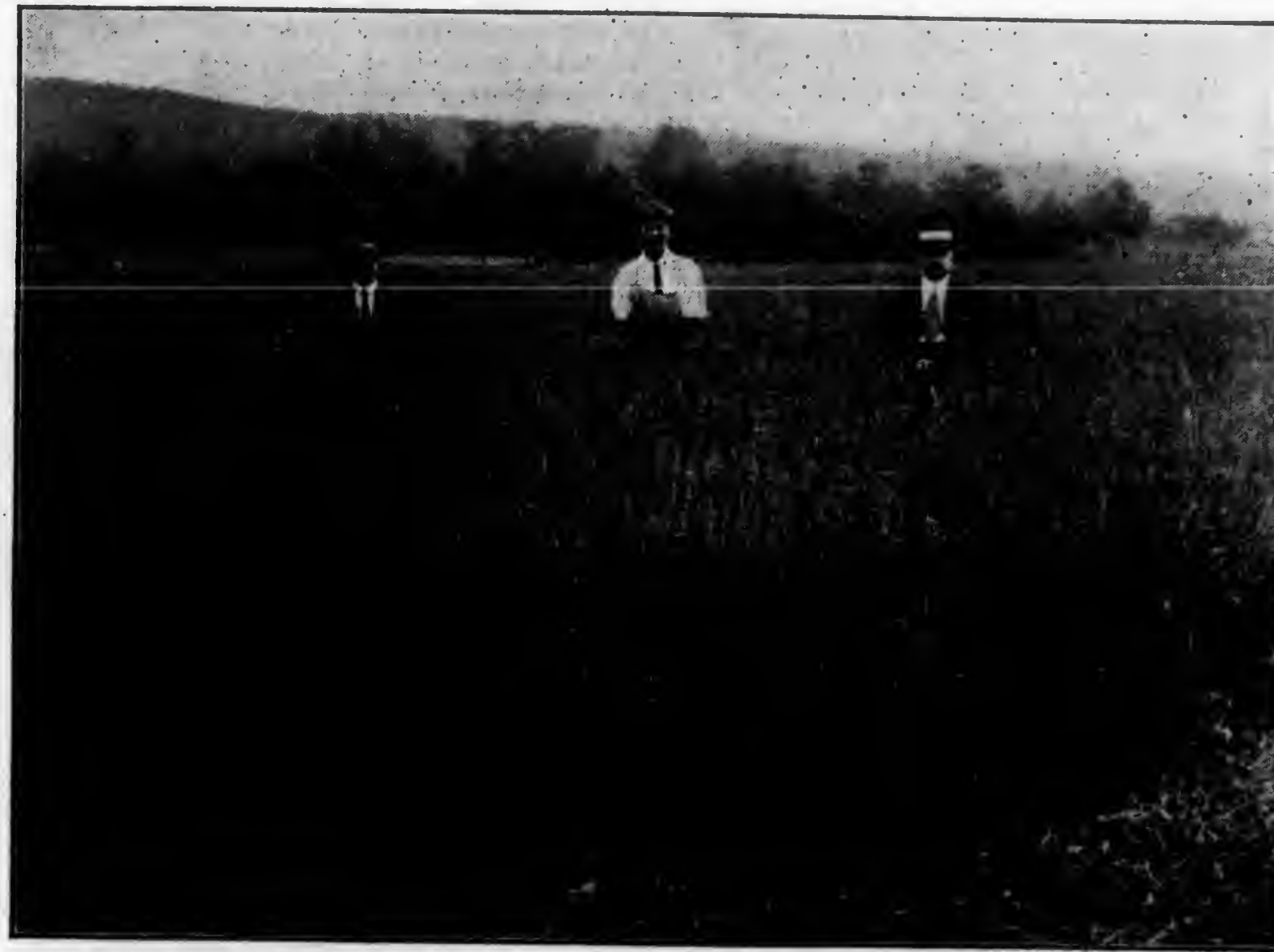
A like experiment was conducted with a field of oats. Every other drill width received 200 lbs. of the 2½-8-1 goods per acre, while the intervening width received nothing. Fully as great a contrast between the fertilized and unfertilized strips could be noted in the oat field as in the wheat field.

Past experience with fertilizers enabled Mr. Sell to foresee pretty accurately just what the results of his little experiment would be. Nevertheless, to prove his opinion, he tried the experiment and never again will question the efficiency of fertilizers.

It is on his wheat and oats that Mr. Sell uses most of the 8 tons or more of fertilizer that he buys each year. His corn receives most of the manure that is produced on the farm and it shows it, too. On July 12th Mr. Sell had one of the finest and evenest large fields of corn that the writer had seen up until that time.

All the hay and straw on the Sell farm is made into manure and returned to the land. He says: "I wouldn't sell any straw off my farm at any price." Such is his manuring system. Besides using a lot of manure and fertilizer, Mr. Sell is a heavy user of lime. He makes a practice of applying 100 bushels of 4 tons of burnt lime to every acre every five years. He has his own lime kiln and his own kiln, and so limes his

(Concluded on page 313)



A Splendid Crop of Timothy and Clover on the Farm of Fred Miller, Geiger's Mills, Berks County, Pa. (Photographed in Early July)

which he has spent a large amount of money in its development in intensive gardening. His success is an evidence of the value of intensive work in a limited area. I asked him what his sales amounted to annually from that 12 acres.

"About \$30,000 a year. Every man employed is a sharer in the profits of the business. The man who drives my wagons into Cleveland and sells the stuff is paid \$75 a month and a percentage on his sales; he is a sharp salesman, and last year made \$1000 above his wages. The little place gives me an income for myself averaging \$10,000 a year."

In the open land not covered with glass Mr. Rutenik grows fall celery. This celery was planted in early June in rows about 2 feet apart and all the space between the rows was packed with manure. The whole was under overhead irrigation, and no cultivation is done, everything being left to the heavy manure mulch and the water, simply pulling out weeds that appear.

In the rear I saw a huge pile of lumber, and asked what that was for. "We set those planks on each side of the celery rows later for blanching. Our crop is blanched early in the fall and is all sold before there is cold weather enough to do any damage. Hence we store none."

In going through these places and not-

ing grown in a rotation with corn, oats and a timothy-clover mixture. He usually has about 45 acres in wheat, 25 in corn, 20 in oats and most of the rest in grass.

"I'm no better than all these other farmers around here," modestly asserts Mr. Sell. "They have just as good farms and raise just as big crops as I do"—all without realizing that the farm on which he stands openly contradicts him.

All over the Sell farm can be seen evidences of careful farming. The big, solid-looking buildings, and all the improved machinery that is stored in them instead of being left out in the weather, speak as eloquently of thrift and good management as do the carefully tilled

ing the wonderful crops they get under great winter difficulties I told the Cleveland growers that if the people on the Delaware-Maryland peninsula ever got the idea of winter forcing, they could beat the Lake Shore people because of the greater amount of winter sunshine and the milder climate, which would make the production more economical.

And now a man from the Arlington gardens near Boston has gone to North Carolina and is growing there in greenhouses and frames, lettuce, cucumbers and tomatoes of the finest quality at the noted winter resort of the golf players

at Pinehurst. There he gets the finest of lettuce with only the glass and no fire heat, and in the heated houses grows tomatoes and cucumbers in excess of the needs of the resort and has to ship north, and is doing it with success.

What is needed in our eastern section is to study the methods that have given men success in a far worse climate than Pennsylvania, New Jersey and Delaware and Maryland. Our truck growers like to get over great areas instead of concentrating capital and energy on smaller ones, and the smaller area often makes the owner more clear money.

THE GARDEN

Edited by W. F. MASSEY

All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

Growing Turnips

I recently mentioned what I called the Long White French turnip, and a correspondent in Virginia wrote that he had applied to the Richmond seedsmen for the seed, and they ridiculed the idea and said there was no such turnip. As I have a package of the seed by me on my desk from a Philadelphia seed house it is evident that the Richmond seedsmen do not know all about turnips. The only difference is that the seedsmen labeled it Large White French instead of Long White French. Southward some call it Rock Turnip.

It is a fine, solid and sweet turnip of the ruta-baga class, and should be sown rather earlier than the strap-leaved varieties. It is now rather too late for it to make its best growth, for I usually sow it in late July, and now am simply waiting for the soil to get fit to work after the deluges of rain we have had for four days.

Middle August is a good time to sow the Early Milan turnip for the earliest fall use, and the regular strap-leaved turnips to succeed them. In sowing turnips I prepare the soil well and then run out furrows two feet apart for garden cultivation, and in these add raw bone meal and nitrate of soda very liberally. Then a furrow is thrown from each side, making a ridge or bed. This is flattened half way and the seed drilled in on the bed.

As the plants develop the rough leaves thinning is needed. Thin them to about 3 inches or more apart, and give the cleanest cultivation. Down here we are fond of the young turnip tops for spring greens, and there is a variety especially adapted to this, known as the Seven-Top turnip. It is not valued for its roots, but for the mass of leaves it makes. Being more hardy than most of the turnips it is left where it grew and protected with a mulch of rough manure, and in spring the young leaves are very acceptable as greens, having a peculiar bitterish flavor that distinguishes them from any other greens, and which we like, too.

For the main crop the Purple Top Globe Turnip is large and good, and I also like the Yellow Aberdeen, as it keeps without getting pithy. In colder sections the turnips can be taken up and put in heaps and covered with straw and earth, and will keep well if just protected from hard freezing. The chief manurial demands of the turnip crop are for nitrogen and phosphorus.

Winter Radishes

Our varieties of winter radishes have been greatly improved by the introduction of the newer Chinese and Japanese varieties. The Turnip-Shaped Red Chinese is an improvement on the old Rose Colored Chinese, and the Celestial is a very large white radish. Another large white one is the Japanese Sakura-jima. But the old Rose Colored Chinese is still good and very hardy. In North Carolina I have bunched these and sold them from the open ground all winter and found they kept perfectly solid and not pithy. Here in southeastern Maryland they will keep where they grew if a heavy mulch of coarse manure is added. In fact, I had them winter years ago in northern Maryland, where it is as cold as Philadelphia, when the bed developed a mat of chickweed that acted as a protection. The Turnip-Shaped Chinese and

the Celestial can be buried and wintered in the same way as turnips and will keep solid in winter. The Celestial is better boiled than turnips, and will furnish a new dish treated in this way. The roots grow to the size of good sized ruta-baga turnips and are white in color.

Like the spring radishes, the winter radishes need very heavy fertilization, and to be grown rapidly to be good. The main objection to the Japanese Sakura-jima is its immense top growth, for the leaves will grow over a foot long and sometimes overgrow the roots, which do not develop as they would with a more moderate growth of tops. I am now using only the Celestial, the Red Turnip-Shaped Chinese and the Rose Colored Chinese. The seed should be sown not later than middle of August. I sow them in the same manner as turnips, on a well fertilized shallow bed or ridge.

Spinach

Spinach is the great crop for greens and the most popular of all. The seed catalogues list several varieties of the smooth seeded kind, and also the prickly seeded sort. Who plants the prickly seed I cannot say, as I have never had any use for it. Some advise the prickly seed for spring sowing, but I have not tried it for many years, and when I did try it found it of no special value as compared with the smooth seeded varieties. It is claimed, however, that it is more hardy than the smooth seeded sorts. But as the smooth seeded spinach is perfectly hardy here and is far better, I do not find any need for the other.

For fall use I sow in August the Norfolk Savoy Leaved spinach. This crop is sown in rows 16 inches apart, and heavily manured, for rapid growth is necessary. Then after the plants have well started I scatter some nitrate of soda alongside the rows to urge a more rapid growth. Then in September I sow seed broadcast and rake it in for wintering over for the spring cutting. In fact, I have done this as late as the first of October here and had the plants winter well. Sown broadcast they winter better than in rows. As the weather gets cold I sprinkle manure over the bed, not thick enough to smother any plants, but thick enough not only to feed the crop, but to act as a winter protection. The plants would winter here all right without it, but the spring growth is much better for the mulch.

Garden Notes

Among the new things I am trying this year the Pimiento pepper is one of the best. The plants are very strong growers, and more prolific than any other large podded sweet pepper. The pods are not so long as the Ruby King pods, but the flesh is thick and entirely free from any hot taste. We have them boiled regularly and I find them very delicious. The green pods are just of a convenient size for stuffing for pickles, and the plants are so prolific that it takes but a few to supply a family.

Of tomatoes, I have grown this summer one new one, the Mississippi Girl. The growth of the vines is remarkably strong and I note that without spraying they are entirely free from leaf blight, while the earlier varieties were badly attacked when not sprayed. This is not an early tomato, but a large and solid one, and seems well suited to the pur-

poses of the canner. I have about concluded to use the Bonny Best only, for the early crop. It is so nearly as early as Earliana that it comes early enough and is a far better tomato. I have tried John Baer two seasons, and while it is certainly a fine tomato, it is not an early one by any means, being two weeks later than Bonny Best under identical treatment.

The Colorado beetles have been worse on the eggplants this season than I have ever known them. It is a daily task, after spraying with lead arsenate, to go over and pick them off by hand, for the heavy rains we have had wash all the poison off as fast as applied, and now I go daily and pick off the mature beetles and brush off the larvae on the hot ground with a whisk broom. With this treatment I have saved the plants.

I find that the best way to treat the overbearing strawberries is to keep them but one season, and plant a new bed every fall. Those I set last fall have done remarkably well. Those set last spring, which gave fruit all last summer from June to October, are not now doing as well and seem crowded and stunted. I will break up this bed and plant a new one this fall.

The Nanticoke blackberry and the Atlantic dewberry are now just ripening and will run all through August. Both are fine berries, but both are terribly thorny. The Nanticoke is good for home use and a home market, but too soft to ship. The Atlantic dewberry is a fine fruit and a good shipper.

Black Valentine beans sown in mid-August will in most seasons make a good crop before frost, and with good pods late in the season they can be canned or packed down in strong brine in stone jars for winter use. Early Horn carrots or the French Forcing carrots will make a crop from August planting. If the late beets were not sown earlier, you can still sow the Egyptian and make a crop.

The Fordhook bush lima beans have made a wonderful crop this season. The large white lima beans seldom make a large crop this far south. They are better suited to northern sections. Here and southward, of all the climbing lima beans the small lima or Sleva, the butter bean of the South, is far more prolific, and to my taste is a better bean than the large white lima. The Fordhook belongs to the Potato lima bean, having thick beans rather than large flat ones. It is far better suited to southern conditions than the large white lima bean.

My climbing beans I grow on the woven wire fence that encloses the garden, and thus save poles and space in the garden.

My third setting of tomato plants was made the first of July. These were plants from seed sown in late May, and are for late August and September fruiting, and I hope for a good supply of well grown green ones when frost comes, so that I can pack them away for ripening a few at a time.

Farmers in South Jersey paid over \$2.00 a ton on the average for stable manure this year. Under such circumstances it is most feasible to devote some land for a part of each year to growing crops to be plowed under. The seed for an acre of this crop could be bought or raised for less than the cost of two tons of manure, the New Jersey State Agricultural College points out, and the labor involved is less than for carting and spreading an application of manure. Even though one were forced to forego one short season money crop, as is not often necessary, to provide the time and space for a green manure crop, he would doubtless gain financially in a term of years.

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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

Wheat Growing—Place in Crop Rotation

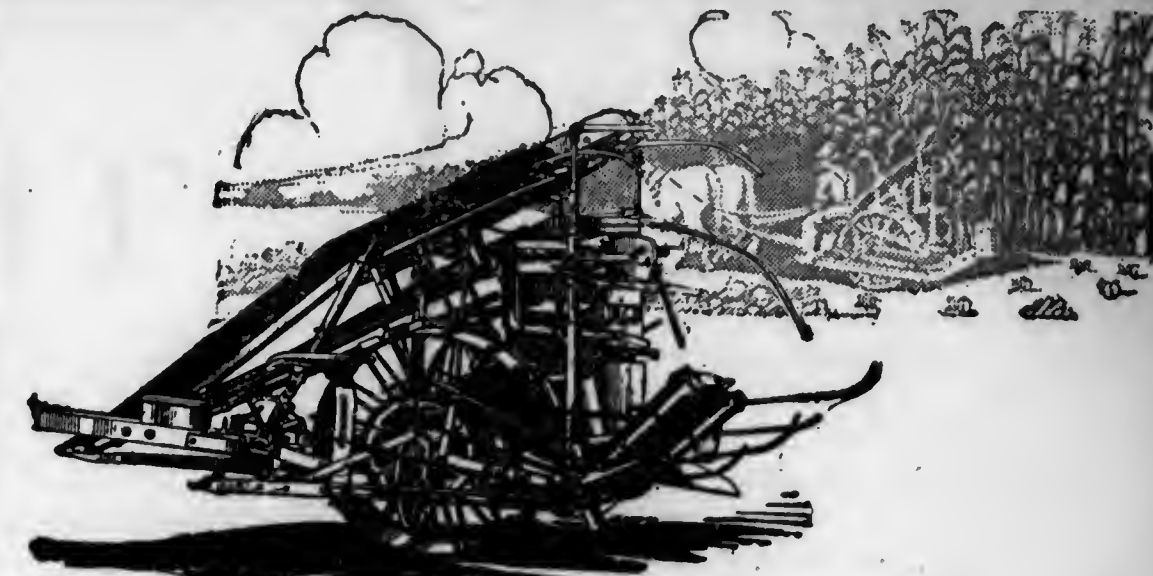
It is generally admitted that wheat is a less profitable crop than corn in the grain growing states. This is because the overhead charges of seeding and harvesting are somewhat greater with wheat and also the labor of harvesting is not so well distributed as in the case of the corn crop. The greater convertibility of the corn crop, enabling the grower to manufacture it into higher priced products, such as milk and meat is a distinct advantage. There are many ways by which the corn crop may be disposed of aside from that of selling the raw product. Nevertheless wheat will continue to be grown for the reason that some system of crop rotation must be followed and the work of the farm arranged so that it will be more or less distributed throughout the season. Since wheat must necessarily be grown quite early on certain types of soil the place it occupies in the rotation of crops will determine in no small degree the profitability of the crop. It has been known



Harvesting a Fine Crop of Wheat on a Long Island Farm

for a long time that the result of growing several cereal crops in succession on the same field is detrimental to the productivity of the soil. And it only requires a few years under such a system to show the effect on the soil. In parts of the Eastern States we find a five-year rotation of corn one year, wheat two years and timothy and clover two years. In most cases the last year of grass is given over to pasture. On ordinary soil and especially where the land is inclined to be thin, such a rotation fails to give the best results for either corn or wheat. The clover upon which is placed the only dependence for improving the soil, has practically disappeared the second year, the land being occupied chiefly by timothy. If the land is pastured the second year, as it often is, there is very little good sod to turn for the corn crop. As a result the corn does not benefit as it should, and the two crops of wheat which follow do not have the conditions they should have. At best the growing of two crops of wheat in succession is an expensive method in the long run. It means that the wheat stubble of the first year must be plowed and fitted at a time of the year most arduous on horse and man, and the land rather heavily fertilized in order to keep up the yield. Where corn, wheat and clover are grown it seems best to change the rotation to a three-year system, so that each crop is kept down only one year. The available manure is then applied to the grass in

fit the land after the corn is cut. This delays the seeding of wheat too much in most cases, especially if the weather is unsettled. Here is where the disk or double action cutaway harrow is especially valuable. Corn stubble land may be easily and thoroughly prepared for wheat if the disk is used, and much valuable time is saved. Careful tests have shown that as good results can be obtained by this method as by plowing. There are localities in the winter wheat belt where the soil is of such a nature that late plowing causes the wheat to winter-kill easily on account of the unsettled condition of the seedbed. So far as fertility is concerned, following corn with wheat is a logical practice, since the coarser sods and manure which were turned under for corn have become, during the season in which the corn is cultivated, well decayed and in a condition to be more readily utilized by the wheat plant. Yet the irregularity in the time of seeding the wheat where it follows corn has an important bearing on the yield. Late sown wheat does not tiller so freely as where sown at the normal time. However, the more fertile soil the later the seeding may be made (within limit) and yet get good tillering. Late seeding is about the only way by which to combat the Hessian fly, but in many cases the seedlings are prolonged far beyond that period. If the rotation is plowed for wheat to follow corn, grow wheat but one year on the same land.



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the crop with available fertilizers which will hasten growth to overcome the late start, and secure vigor with consequent resistance to later broods. Use 200 to 400 pounds per acre containing at least 2 percent ammonia. Acid phosphate does not give the necessary quick growth and resistance to the fly.

In Farmers' Bulletin No. 640, U. S. Department of Agriculture, fertilizers are recommended to give vigor to late sown crops and resistance to the Hessian Fly.

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Then try to arrange the removal of the corn so that the land may be fitted early enough to give the wheat a good start in the fall. If only a moderate acreage of wheat is desired in proportion to other crops, some of the canning crops, such as sweet corn and tomatoes, or even early potatoes, may be followed with wheat to better advantage as to earliness of seeding than field corn. The clean culture which accompanies the growing of early potatoes and sweet corn puts the land in a condition to grow splendid wheat. Such an arrangement of crops does away with the necessity for plowing the land for wheat as the disk will put the land in excellent shape. As the writer sees the problem of wheat growing in the Eastern States the key to better yields is an arrangement of crops in the rotation so that the wheat may be seeded at the normal time and on a soil that is fertile enough to bring good yields even if seeding must in cases be delayed. The proper crop rotation will do much toward improving the fertility of the land and as well the distribution of labor so that the wheat may be seeded at the proper time. The three-year rotation of corn, wheat and grass (clover and timothy) is good, but has the drawback of the uncertainty of the removal of the corn crop. Where some variety of crops may be grown profitably the following rotation may be suggestive. First year, corn, seeded to crimson clover at the last cultivation; second year, clover turned and the field disked for soy beans, sweet corn or early potatoes. All of these crops may be removed in good time for seeding to wheat and with less labor than plowing after corn. Fourth year, red clover and timothy. The second crop of wheat, now so commonly grown in the rotations found in Delaware and Maryland, should be dropped. It would be far better for the land to grow two crops of corn in succession on the same field than wheat. Thus the first year of corn is seeded to crimson clover and this turned under for the second crop, which is then followed by wheat and finally the fourth year by clover and timothy. Judicious fertilization is necessary on most soils, but the advantages to be derived from the proper crop rotation are much greater than are generally suspected. Wheat is a crop which must pass the winter shortly after it begins its life history. Thus it is subject to very trying conditions and should be given every advantage that time of seeding, fertility of the soil and variety may combine.

Cover Crops and Prosperity

Few farmers realize the value of cover crops. A good many know that it is well to have the land covered in winter time to prevent erosion, and that if plowed down in the spring a great deal of value will be obtained from the resulting humus. But there are even more important advantages to be considered, and every man who tills the land should be familiar with them.

Of the ten indispensable elements which the plant requires, three may be lacking or deficient in many soils—nitrogen, phosphoric acid and potash. Of these, nitrogen is by far the most important, not only because it is more often lacking and costs more than the others, but also because it is the most easily lost to the soil. Hence a most important part of every farmer's duty is to keep his nitrogen supply constant in the cheapest possible way.

If it were possible to keep nitrogen in the soil indefinitely, it might pay to buy a stock every ten years or so. But since this is impossible, no farmer can afford to buy this nitrogen annually, especially

since he has the power to grow it at much less cost. It has been well said that "the future of American farming depends upon the free use of legumes."

The legumes, with their infinite power of gathering nitrogen from the air and chemically changing it into the form which is needed by all plants, is the best friend that a farmer can have. Where the legumes grow as weeds—that farm is prosperous.

In order to grow legumes successfully it is necessary to inoculate the seed with the particular bacteria which is essential to the plant's development. The most convenient way to do this is to inoculate the seed before it is sown, by simply mixing with the seed a culture of the desired bacteria. It pays to grow the legumes carefully.

Queries Answered

Clover and Timothy.—C. G. L., Pennsylvania, writes: "Would you advise sowing both clover and timothy in August in a corn field at last cultivation, or only clover, and timothy in the spring?"

In some instances very good catches of grass are secured by seeding both clover and timothy and clover in corn in the late summer. However, the uncertainties of rainfall may cause failure. If you sow a single crop use the timothy, and seed the clover in the spring.

If the land is clean and in a good state of fertility you have a fair chance of securing a stand of both clover and timothy by seeding at the last cultivation.

The Hessian Fly

Quick-acting Fertilizers
A Preventive Measure

You can beat the Hessian Fly with Fertilizers if you use the right kind. The idea is to seed late and force the fall growth with fertilizer containing at least 2% quickly available ammonia and not less than 10% available phosphoric acid. But it must be the right kind of fertilizer. We make it. Acid phosphate alone will not bring the quick growing effect. One more bushel of wheat per acre will pay for the ammonia and may save you many bushels if the fly is present. If there is no fly, the fertilizer will repay its cost anyhow in the wheat crop.

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Please refer to your August 1st copy of "The Practical Farmer," and note particularly the excellent fields of Wheat and Timothy reproduced on the front cover. All of these crops were grown exclusively on E. FRANK COE'S fertilizer.

To assist our friends in getting the greatest possible returns from their Wheat crop, we have prepared a booklet entitled, "Winter Wheat," and will be glad to send you a copy with our compliments if you will mention this paper.

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HORTICULTURAL

Edited by C. A. McCUE

The Cost of a Peach Orchard

The Delaware Agricultural Experiment Station has just issued a bulletin setting forth a financial statement of the Station peach orchard. This orchard consists of about 9½ acres of Elberta and Belle of Georgia peaches. The orchard has been used for experimental purposes and the receipts are only an incidental feature of its management. The trees were planted in the spring of 1908 and the report reviews the orchard operations, costs and receipts up to Oct. 1, 1915. Only four crops have been harvested during this eight-year period.

The first year the orchard was set a crop of field corn was grown in the orchard and the value of the corn crop was subtracted from the year's cost, leaving a cost for the first year of 6.1 cents per tree. The second year the cost was 16.44 cents per tree, the third year 21.55 cents per tree, the fourth year 28.97 cents per tree, the fifth year \$1.14 per tree; the sixth year the cost was 56 cents per tree with a return in fruit of \$1.05 per tree. The seventh year the expenses were \$1.24½ per tree, with a return of \$2.70 per tree. The eighth, and last, year the cost was \$1.40 per tree, with an income in fruit to the value of \$2.46 per tree. The total cost for the 9.56 acres for eight years was \$4890.91, with a receipt in fruit to the value of \$7599.29.

During this time there have been picked and sold 13,596 baskets of peaches and 2437 baskets of dropped or windfall peaches were marketed. The average selling price of picked fruit was 51.55 cents per basket, and for dropped fruit 24.2 cents per basket.

The four-year average of production has been 4.13 baskets per tree of Elberta and 4.01 baskets per tree of Belle of Georgia.

Considering the land worth \$100 per acre at the start, and compounding all the investment at 5 per cent. compound interest, it was found that at the end of the sixth year the orchard still owed the Station \$209.65. Large crops were harvested and sold during the seventh and eighth years, so that at the end of the eighth year the orchard showed a profit of \$2280.52, or a yearly average profit for the eight years of \$29.81 per acre. This amount represents a return of 5 per cent. on a valuation of \$596.20 per acre.

The itemized cost of producing a basket of peaches was as follows:

Interest on investment	Cts. per bas.
Interest on machinery equipment	2.963
Pruning and hauling brush	2.9567
Labor of spraying	3.1768
Spray chemicals	1.7421
Cultivation and sowing cover crops	2.5684
Mixing and applying fertilizers	.4727
Fertilizers	2.8371
Cover crop seed	.5432
Worming and summer pruning	1.4288
Harvesting labor	4.8045
Packages	6.5292
Hauling	.1465
Time on repairs to tools	.2353
Repairing broken trees	.0355
Freight bills	1.5750
Propping and thinning	.3285
Lime and cost of applying	.0545
Hoeling	.1094
Cost of trees	.2577
Preparation of land for planting	.2494
Staking	.0484
Planting	.0191
Total	34.472

The profit per basket was 12.92 cents. Undoubtedly if the orchard had been

handled as a commercial orchard and not as a strictly experimental one, the profits would have been greater. The record of this orchard shows that peach growing can be made a remunerative business, yet peach growing is not a "get-rich-quick" proposition. To make a peach orchard return a high interest on the investment requires a thorough knowledge of the peach crop, good judgment and skillful handling.

Packing Fruit

More and more attention is being paid each year to better packing of all kinds of fruit. Competition is becoming so keen that the kind of pack often decides the selling price of fruit. This is especially true of peaches. The old 16-quart Delaware basket is doomed as a general market package and the six-basket carrier will probably be the peach package of the future in the East. In the Middle West and North the bushel basket has a firm hold upon the public, but is doubtful if it can successfully compete with the six-basket carrier. For many years the six-basket carrier of peaches has been packed according to what is known as the Georgia pack. In the pack a smaller peach is used for the bottom layer than is used for the top layer. That is to say, the peaches do not run uniform as to size throughout the package. Recently the market has come to know the "Jersey pack," which is similar in many respects to the Georgia pack, but the peaches run uniform to size throughout the package. In case of close competition and dull markets it is probable that the Jersey pack will over-sell the Georgia pack. Delaware, Maryland and New Jersey growers are strongly advised to abandon the Georgia pack and adopt the New Jersey pack. The New Jersey pack has been amply described in a recent New Jersey bulletin. The Delaware Station has adopted the Jersey pack as a standard, and has had several hundred leaflets describing the Jersey pack printed for distribution to peach growers.

Many states are awaking to the really disgraceful, and in many cases real dishonest, practices in packs of apples in barrels. New York growers in particular had made an unenviable reputation along this line. The result was, the New York apple packing law, which is being either adopted or revised by many other apple growing states.

There is no reason why a barrel pack of apples cannot be as reliable as a box pack.

Grading is one of the prime essentials to good fruit packing, and without good honest grading any pack is doomed to failure. Manufacturers of foodstuffs are constantly striving to put up their goods in a style that is attractive to the buyer. The fruit growers of the country can well take a lesson from their results.

The packing season for apples and peaches is now approaching and it behooves every grower who has or hopes to maintain a reputation for his products to open his eyes to the possibilities of good fruit packs and attractive packages.

Queries Answered

Rot in Grapes.—A. J. Georgia, writes: "This season our grapes have all rotted on the vine. They look as though they were of a brown variety and not decayed in the least, and hang in great clusters this way. The rot seems, thus far, to be worse in the white grapes than any others. What can be done to prevent this rot?"

The trouble with your grapes is what is known as brown rot. This disease, while very destructive to grapes, is one that can be quite readily held in check

by proper spraying. Unfortunately there is nothing that can be done to save this year's crop, but, by the following method of procedure, the trouble can be avoided next year.

I am unable to tell from your letter if your grapes are Scuppernongs or the ordinary American grape as it is grown in the North. If the latter, prune them quite heavily this winter and burn all the prunings. The Scuppernong will not stand such severe pruning. Next spring, no matter what the type of grape, spray them with Bordeaux mixture when the young shoots are a few inches long. Repeat this spray about every two weeks until the grapes are half grown. If you find any rot after that period, spray with a pound of acetate of copper to 50 gallons of water. This last spray will avoid staining the fruit. If you are troubled with any insects eating either fruit or foliage, put a couple of pounds of arsenate of lead into every 50 gallons of the spray. In using Bordeaux mixture always use 4 pounds of copper sulphate and 5 pounds of lime to every 50 gallons of water. Stone lime is best, although hydrated lime will make a very good Bordeaux. C. A. M.

A Farmer Experimenter

(Concluded from page 309)

fields at small cost. He believes in keeping the soil sweet at almost any cost.

Mr. Sell has finished his experiments with control measures against the Hessian fly. Briefly stated, his results have proved to him that the fertilizer he uses on his wheat not only makes better wheat and more of it, but also, that the fertilizer remarkably reduces or nearly eliminates all Hessian fly damage.

Three years ago Mr. Sell had one of his hands put some chicken manure on some of the thin places in the wheat field. Normally the Hessian fly is quite bad in this community, but when harvest time came that year Mr. Sell was surprised to see that in addition to being better wheat, the wheat on the manured places was practically undamaged by the fly.

"If chicken manure will prevent fly damage," reasoned Mr. Sell, "why won't fertilizer do the same thing. I'm going to try it and see."

He did try fertilizer the next year and obtained the same results that he had from the chicken manure, except that these results were on a much larger scale. So far as he was concerned, the Hessian fly was conquered. The surprising results of the control of the fly by means of fertilizer has made Mr. Sell quite positive of his future freedom from bad fly damage.

"I don't care if the fly is bad," he says, "I can take a field and prepare it good, and use plenty of fertilizer and lime, and I won't be bothered by the fly. If I don't use the fertilizer the fly gets me, sure. There's not much use trying to grow good wheat any more around here unless you do use fertilizer. I know that because I've proved it right here."

There is no question but that Mr. Sell has opened up new possibilities of wheat growing in fly-infested regions. The fertilizer treatment, together with the late sowing commonly practiced, is now recognized by the U. S. Department of Agriculture as a means of fighting the Hessian fly. A fertilizer containing ammonia must be used. This gives a quick growth in the fall and helps to overcome the bad effects of late planting. Then the fertilized wheat will stool out and make more stems than will wheat not so well nourished. This gives added protection against the fly.

Mr. Sell in his experimenting made observations and practical applications several years ago of a principle which is only now winning general recognition. When generally adopted this treatment will mean a tremendous total saving of losses now caused by the attacks of the Hessian fly.

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Seed must please you. If it don't you return it at our expense for freight and we return your money.

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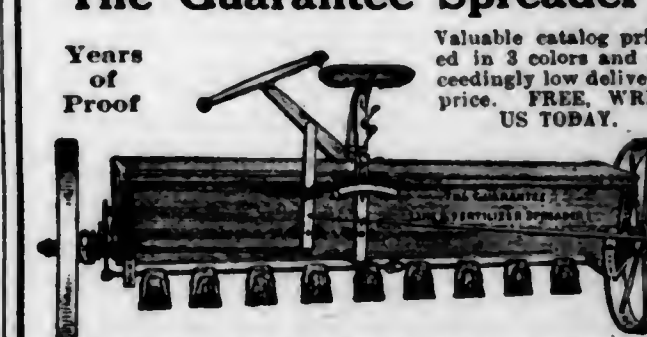
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The Women's Exchange

This is the farm women's own department—for them and by them. It is devoted to the discussion of topics of everyday interest to the women of the farm family. The Practical Farmer invites—and expects—you not only to write your experiences on the topics under discussion but also to propose topics for future discussions. The best letter published herein each issue will be awarded a prize of one dollar, and for each other letter published we will pay fifty cents. Address: WOMEN'S DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

SEPTEMBER 1.—Give us your experience with drying or evaporating fruits and vegetables instead of canning. Which ones do you preserve this way, what is your method and how do the flavor and quality compare with canned goods? Which is the more profitable to sell? Limit article to 250 words or less.

SEPTEMBER 15.—The season for making pickles is at hand. We have had many requests for an Exchange on pickling, that the subject for this issue really selects itself. So tell us all about your favorite pickles—either sweet or sour—and how you make it. Besides the ingredients and how they are put together be sure to give us the little tricks or schemes of your own which have made your pickle famous among your friends. Give one pickle only.

All contributions to the Exchange must reach us at least 15 days before the date of issue in which the topic is to be discussed.

Cold Desserts

M. L. W., Charleston, S. C.—Here's my very best recipe for a hot weather dessert. It is easy to prepare, requiring no cooking, light and yet nourishing, and may be made with various kinds of fruit, though, perhaps, peach or pineapple is the most delectable.

PINEAPPLE TRIFLE.—Add 1 cupful of sugar to a grated, ripe pineapple. Soak 1½ tablespoonfuls of powdered gelatin in half a cupful of cold water; heat and mix with the pineapple. Whip a pint of cream and mix all together until blend cream; set into a wet mold to stiffen and chill; when set and sufficiently chilled (if one has an ice-box) turn on a glass dish and decorate (if desired) with candied or preserved cherries, or preserved whole strawberries. This is a most delicious and attractive dish.

Miss R. E. B., Westfield, N. Y.—Our favorite summer dessert is lemon or velvet pudding. Put 1 pint of water, ½ gill of milk, 2 tablespoonfuls melted butter, in a double boiler. When nearly boiling, add the following: ½ cupful of granulated sugar, yolks of 2 eggs, ½ teaspoonful of salt. Grate the rind and juice of 1 lemon; beat all together, add 3 tablespoonfuls of corn starch, then add to the hot mixture; let cook slowly for 15 minutes. Remove from fire and pour into baking dish. Beat the whites of the 2 eggs with 1 teaspoonful of powdered sugar; when stiff spread on top of pudding. Set in oven to brown. Chill and serve very cold. This makes a very appetizing dessert for a warm day.

Miss E. M. S., Uniondale, Pa.—Angel snow is our favorite summer dessert. Take 1 dozen sweet oranges, 1 cupful of sugar, 1 coconut. Pare and grate the coconut; then peel the oranges and cut in small pieces; be sure to remove the seeds. Put a layer of oranges in the bottom of a glass dish, sprinkle with sugar, then a layer of coconut, then another layer of oranges, sugar, and so on until dish is full, having the last layer coconut. Let stand about one hour before serving. This makes a delicious dessert for the hot summer days.

L. W., Eau Claire, Wis.—My favorite cold dessert is maple parfait. To make, take 4 eggs, 1 cupful of hot maple syrup, 1 pint of cream; beat eggs slightly, add hot syrup slowly, cook until mixture thickens, and add cream that has been whipped. Pack in salt and ice and let stand for at least three hours. I use my ice cream freezer to pack it in, but this is not necessary, as it can be packed just as well by putting mixture in tightly covered jar and placing in a pall of ice. This recipe may be varied by using fruit juices instead of maple syrup, and adding nut meats. I like this dessert especially for days when I am to have a guest. I prepare it with my breakfast fire and then set it away until I need to use it.

Mrs. A. P. L., Martinsburg, W. Va.—While the following recipe will be classed with the frozen desserts, we consider it very easily made and a most delicious dessert.

CHOCOLATE MOUSSE.—Put 1 ounce, or square, of chocolate (unwetted) into a small saucepan with ¼ cupful of sugar; add 1 tablespoonful of boiling water and stir over the fire until smooth, add a few spoonfuls of cream to this mix-

ture and let stand until the following is mixed: Whip 1 pint of cream until quite stiff, sweeten with ¾ cupful of sugar, add 1 tablespoonful of vanilla extract and the chocolate mixture. Pour into a chilled mold and pack in a wooden pall for three or four hours, using equal parts of ice and salt. We very often use our ice cream freezer, leaving the dashers out and the top off.

Mrs. C. H., Aspers, Pa.—Blackberry mush is our favorite summer dessert. After canning blackberries there is always a lot of juice left over. This I pour through a sieve to remove the seeds, then while still hot I thicken it with corn starch and flour to the consistency one would make ordinary corn starch pudding. Sweeten to taste and serve cold with rich or whipped cream. This makes a beautiful colored and most excellent dessert, and so easily and quickly made.

Miss M. G. W., Snell, Va.—Corn starch pudding is easy to make, and a dessert enjoyed by all of our family. It is made as follows: Take 1 quart of milk, bring to boiling point, then mix 4 tablespoonfuls of corn starch and the same quantity of sugar in a bowl. Beat 1 egg until light and add to sugar and corn starch; beat well and add to milk as it comes to a boil; let boil 5 minutes, add ½ teaspoonful of salt and flavor to taste, then pour into cups or molds and set in cold water to mold, which takes only a short time. To serve turn from mold into saucer and serve with plain or whipped cream.

There are many possibilities in the above, by which it may be varied according to one's taste. Among them are the following: Chopped nuts or fruit may be added just before pouring into molds; peaches, oranges or pineapples are especially nice; chocolate may be mixed with the sugar and corn starch and added to the milk. A spoonful of jelly in the center of each mold gives a touch that is pleasing to both the eye and palate. Last, but not least, more milk and sugar may be added and then frozen, or it may be used for sauce for cottage pudding or sponge cake.

Mrs. S. J., State College, Pa.—The following is the best and most refreshing dessert I have ever had:

PRUNE DESSERT.—Cook ½ pound of prunes until soft; chop them fine; take ½ package of gelatin, dissolve it in ½ pint of water, add 1 cupful of sugar and 1½ pints of boiling water and the prunes. When cold garnish with whipped cream and serve.

Mrs. B. E. B., Virginia Mills, Pa.—My favorite dessert is what is often called "Aunt Han's" rice pudding, and the folks never tire of it. Two tablespoonfuls of rice, ½ cupful sugar, 1 quart rich milk, ½ teaspoonful grated nutmeg (sometimes I omit the nutmeg). Bake one hour, or until a thick, creamy mass. Have ready 1 cupful of raisins, which have been boiled until plump; when pudding and fruit are cold, stir together and serve. A very good dessert, especially when served with small spice cakes.

Mrs. M. B. M., Pine Bush, N. Y.—I think a good, nourishing and simple dessert, for hot weather especially, is custard. I use 2 eggs, about a pint of milk, ½ cupful sugar, a little salt, and nutmeg for flavor. I add a handful of coconut or raisins, or some preserved ginger is very nice. I put my custard in little ramekins and set them in a pan of hot water and boil for about ten minutes. Do not let the water come to the top of the ramekins or it may boil over on the custard.

Miss J. M. G., Buchanan, Va.—This dessert is better prepared the day before it is to be served, and the eggs, milk and coconut make it so nutritious that it is particularly good when a light dinner is served. We like it for Sunday.

Soak 1 pint of bread crumbs (less if very dry bread, as stiff bread pudding is unpalatable) in 1 quart of milk for half

an hour, add 2 tablespoonfuls of melted butter, 1 cupful of sugar, 1 teaspoonful orange extract, 1 cupful coconut, 3 eggs beaten light. Mix, pour into buttered pan or dish. Bake one-half hour. Serve very cold, with or without cream.

If meringue is desired, whites of 2 eggs may be reserved, beaten quite stiff with 3 tablespoonfuls of granulated sugar, spread on the baked pudding and lightly browned in a moderate oven. Bright colored jelly may be dotted over the top to make a more attractive looking dish. A square of grated chocolate melted over hot water and added to above receipt makes a delicious pudding, or the chocolate may be used instead of coconut for variation.

Mrs. A. B. K., Rodman, N. Y.—The following receipt for tapioca cream is not out of the ordinary, but we like it very much. Cover 2 tablespoonfuls of tapioca with water and let stand over night. In the morning, pour off water, if any, and put in 1 quart of milk over the fire. When it boils, stir in the yolks of 2 eggs, 2½ cupful of sugar, a pinch of salt; stir until it thickens. Flavor to

suit. Use the whites of the eggs and 2 spoonfuls of sugar for frosting and brown in oven. I set it on the cement floor of cellar so it will be cold, then serve in berry or cereal dishes.

Mrs. K. S. S., Marlton, N. J.—Peach sponge, made as follows, is a favorite summer dessert with us: ½ cupful of sugar, 2 eggs, 2 tablespoonfuls sugar, ¼ teaspoonful almond extract, ¼ can of peaches, ¼ cupful granulated tapioca, pinch of salt, 2 cupfuls of milk, 2 teaspoonfuls of corn starch. Mash the peaches and rub through a strainer; add water to make a pint; put in the double boiler and stir in the tapioca mixed with a little cold water. Cook for 15 minutes and add ½ cupful of sugar and a speck of salt. Fold in the stiffly beaten whites of the eggs. Cook for 1 minute longer and turn into molds to cool. Beat the yolks of the eggs with the sugar; stir in the corn starch dissolved in a little of the cold milk and add the mixture to the remainder of the milk in the double boiler. Stir until it thickens; flavor with almond and when cool pour around the sponge.

Our Fashions and Patterns

Full directions for making, as well as the quantity of material required, accompany each pattern. Patterns are perfect-fitting and seam allowing. When ordering write your name and address in full, state the number and size of each pattern you want and send \$1.00 for each. Address: FASHION DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.



7890.—Ladies' shirtwaist. Cut in sizes 36 to 42 inches bust measure. Long or short sleeves may be used.

7891.—Boys' suit. Cut in sizes 2, 4 and 6 years. Straight or bloomer trousers may be used and the waist may button at the side or slip over the head.

7892.—Misses' sport dress. Cut in sizes 14, 16, 18 and 20 years. Plain and striped materials are very prettily combined in making this dress.

7893.—Ladies' shirtwaist. Cut in sizes 36 to 42 inches bust measure. Long or short sleeves may be used.

7894.—Ladies' apron. Cut in one size. The apron is cut in one piece and slips on over the head.

7895.—Children's apron. Cut in sizes 2 to 10 years. The apron may be made with or without sleeves and the body and sleeves are in one.

7896.—Girls' dress. Cut in sizes 6 to 12 years. The dress closes at the front and may have long or short sleeves.

7897.—Ladies' skirt. Cut in sizes 24 to 32 inches waist measure. The skirt is cut in four gores and has side pockets.

7898.—Girls' dress. Cut in sizes 4 to 11 years. The dress closes at the left side of the front and has a three-gored skirt.

7899.—Ladies' house dress. Cut in sizes 36 to 44 inches bust measure. This dress is in one piece from the shoulders to the lower edge.

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The Practical Farmer

Live Stock and Dairy Section

EDITED BY W. H. TOMHAVE

Silos on Eastern Farms—III

By W. H. TOMHAVE

FILLING THE SILO.—The time is approaching when the corn crop will have to be put into the silo. There are a number of problems in filling the silo that will confront the farmer, especially if he is filling a silo for the first time. We shall try and briefly discuss some of the important of these in this issue. In the last issue we briefly discussed the machinery necessary for filling the silo. If this machinery has been previously used, it is advisable to overhaul it to make certain that all parts are in good shape and that new parts may be ordered if any are missing.

WHEN TO CUT THE CORN.—There is some difference of opinion as to the time corn should be cut for the silo. It has been demonstrated again and again, however, that the proper time is when the corn is bordering on maturity; this would be at least in the dough stage or when the lower leaves are beginning to turn brown. This would mean filling the silo at the time when the corn is ready to be cut for silage purposes. Corn at this stage contains the largest amount of food nutrients and thus will make the most valuable silage. Care must be taken that there is sufficient moisture to make it pack and keep properly. The lengths in which to cut the corn will vary slightly, ranging from ½ to 1½ inches. Under average conditions, it is desirable to cut it from ½ to ¾ of an inch in length. When cut in such lengths it will make the most palatable silage and is more easily packed than where it is cut in larger pieces. There is less danger of air pockets being formed and a larger amount of silage can be packed in a given space.

In most instances it becomes necessary to fill the silo rapidly on account of working in cooperation with neighbors. Several silos may have to be filled with the same machinery and in such a case it is desirable to do it as quickly as possible to avoid having the corn damaged by frost. Rapid filling often results in considerable settling of the contents of the silo and it may be desirable to refill at the end of a week, or as soon as the machinery is available. This will make it possible to utilize the space in the silo to the best advantage. If the machinery is not used for filling more than one silo it can be filled slowly and when nearly filled allowed to settle and the remainder put in when convenient.

PLACING THE CORN IN THE SILO.—Success in making silage depends to a large extent upon the method of packing it in the silo. There are different ways of packing it, but the principal points to be kept in mind are to have the light and heavy particles evenly distributed and thoroughly packed. Nearly all types of cutters have distributors that are a great

deal in filling the silo. They save a great deal of labor and are much more thorough in distributing than is possible by hand. In packing the silage, it is a good practice to keep the middle lower than the sides. This will allow the sides to pack and settle more uniformly. Tampers may be used in addition to the tramping of the men which aids materially in getting the corn securely packed.

ADDING WATER.—Under ordinary conditions it is not necessary to add water to the corn when put into the silo. The corn when cut should feel moist and not contain too many dry leaves. Water need only be added under the following conditions: When the corn is very ripe and will not pack well; when the corn crop has been frosted and dried out before it is cut; when field shocked corn

Why We Should Raise Hogs

By ROBERT E. WHITEMAN

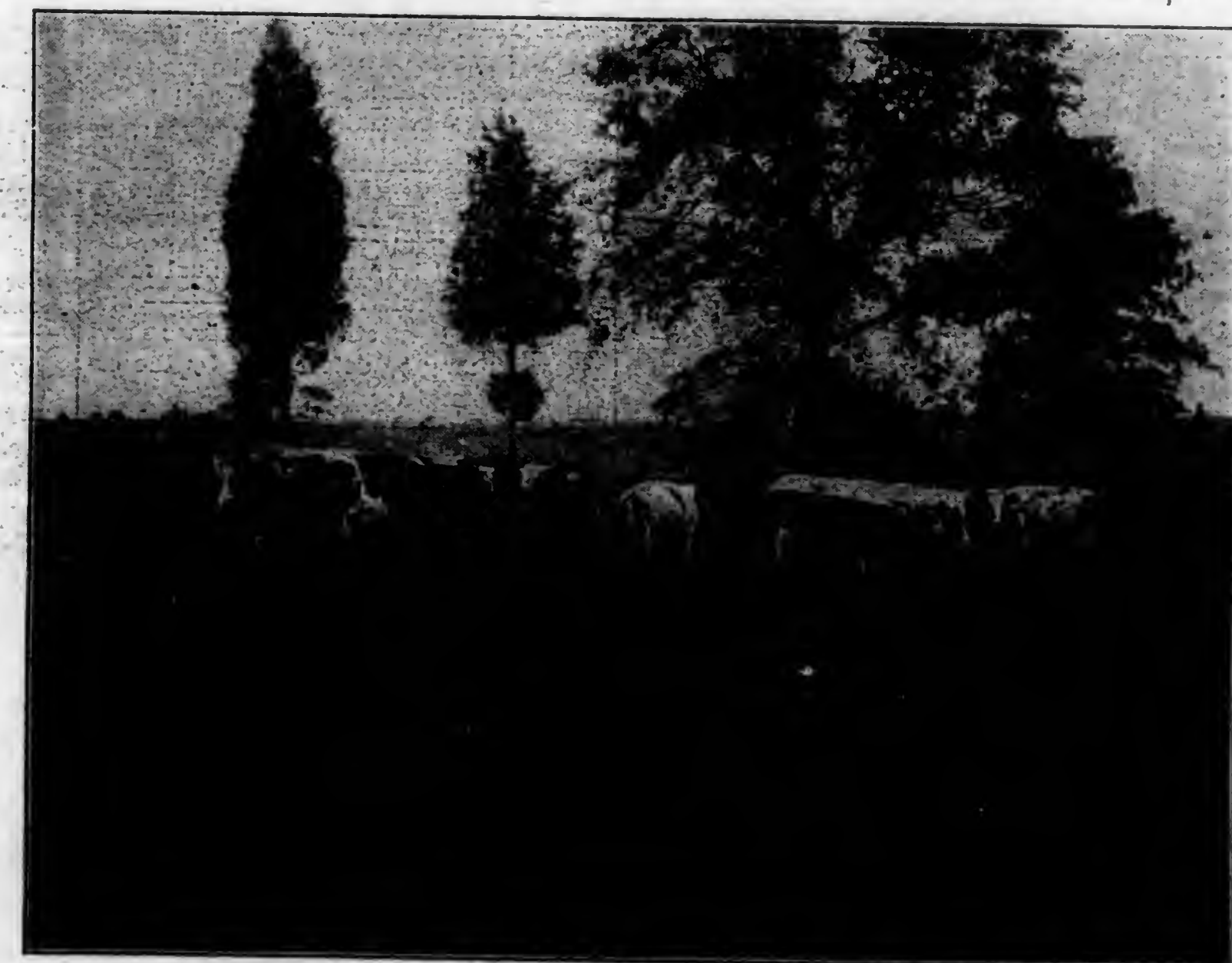
With hogs hovering around the \$10 a hundred mark it seems that the hog should have his place in the list of farm animals of all Eastern States. The corn belt hog has long held first place in the eyes of the nation, but in recent years the production of swine has increased rapidly in nearly every corner of the United States. For example, Wisconsin, one of our country's foremost dairy states, raised swine during 1915 to a value of \$20,000,000. If the dairy farmers of the northern Middle West are taking such an interest in hogs, it seems that the Eastern farmer should be awakening to the possibilities of the swine industry. A person often hears the remark that the hog is the "mortgage lifter." I would like to emphasize the fact that hogs should be raised to consume the by-product of our Eastern dairy

On every farm where there are boys, swine should find a hearty welcome. It is by this one feature of farming that many a boy has been kept on the farm. The care of a calf or a pig until maturity, the money, when sold, to be called his own, has put a bright inspiration in his mind and given a chance for higher ideals.

There are several reasons why I raise hogs with profit each year. I like the hog, first of all, as nothing in the live stock line yields so promptly to the feed given them, in a financial way. I started to raise hogs because I could begin with so small an outlay of capital. With an investment of \$25, \$35 or \$40 in a good brood sow, in seven to eight months a person has an income of \$125 or better is she has been given fair care. No animal except the dairy cow responds so well to care as does the farm hog. I also started to raise hogs because it did not require expensive housing and equipment. A shady woodlot or a roof out in the open field is all the shelter the hog needs in the summer time. In winter a shelter with the west and north sides enclosed and with a sloping ground to drain the surplus water away, is all that is required, except at farrowing time. I have found the 6x6 house with a door in the roof which could be raised on sunny days, the most economical and profitable.

This farrowing pen can be built on a sled and moved to various parts of the farm or parts of the field or lot where enclosed, thus one has a fresh place for the shelter. The hog will give very profitable returns, if in a small enclosure, but will be thrifter and develop better if given the run of some green growing crop during the summer, thus converting clover, rye, rape and peas into pork, which we all know commands a good price. To

much slower and more laborious process. If the corn harvester is used, it is advisable to make what may seem small bundles. Such bundles are easier to handle and can be put through the silage cutter much quicker than large bundles. The corn is hauled to the silo on hay racks or in some cases a low swung rack is used. If the corn should become frosted it is a good practice to cut all that is to go into the silo and put the bundles into piles so as to lessen the evaporation of the moisture from the fodder. In our next issue we plan to discuss the feeding of silage to farm animals.



A Three-Year-old Alfalfa Field on the Farm of Walter Shute, Bridgeton, N. J. Seeded after potatoes, without fertilizer. Top dressed for two years with acid phosphate and muriate of potash, 500 lbs. per acre. Third year top dressed with stable manure. Field pastured two seasons. In pasture again this year.

is used to refill the silo. When water must be added it should be used in such amounts that the corn will be thoroughly moistened. The manner in which the water is added will depend upon the conveniences at hand. It may be run directly into the silo by means of a small hose or it may be run into the blower when such is used.

COVERING THE CONTENTS.—There is always more or less waste of material on the top after the silo has been filled. This cannot be avoided unless the feeding is begun as soon as the filling is finished, which, however, is usually not practical. This waste extends to a depth of ten to twelve inches. In order to reduce this waste it is desirable to use some less valuable material for the top. The ears can be broken out of the corn and only the stalks used. This should be thoroughly packed, soaked with water

and left in this condition. It may be seeded with oats, which will sprout in a few days, seal the top and keep the air out and materially reduce the waste. Straw may be cut for the top and thoroughly saturated with water and packed in so as to properly seal the contents.

CUTTING THE CORN.—In cutting the field corn for silage it may be necessary to cut a little in advance of filling. This is especially true when the field of corn is near the silo so that it does not have to be hauled a long distance. A corn harvester is the most convenient implement with which to cut the corn. It may, however, be cut by hand, but is a

work is greater than ever before and only the pure-bred will sell for enough to cover the cost of production. Who can raise a 4-year-old for a hundred and twenty-five? That is about what the common-bred 4-year-old is bringing; yet the average pure-bred of that age will about double the price—meaning a hundred and twenty-five loss on each common-bred colt, for it cost as much to produce it as the pure-bred.

Of course, I would not advise any one, except those who give all their time to horse breeding, to invest in expensive pure-bred mares. I would not do it myself, if I had a really fine grade brood mare; but neither would I breed my mare to a scrub horse—and any grade stallion is a scrub for breeding purposes. It is possible to improve the breed by crossing a faultless grade mare with a pure-bred horse, of a powerful strain, and then, if a mare sufficiently perfect in soundness, style, intelligence and temperament results, breed her to another pure-bred of the same breed.

But if a grade mare has a fault in temperament, habit, style, intelligence, or an unsoundness in blood, bone or wind, I would hardly invest a common fee in her offspring if some one else would bear all other expenses. Her colts may not always give any indication of her faults or weaknesses, but they will be predisposed to them. I could show many proofs of this among farmers who tried to practice economy. Some of their colts are almost unsalable but cost as much to bring to working age as good colts. Of course, this does not apply to unsoundness from accident nor from hard usage, unless predisposition is indicated by easy yielding.

I find that size has more and more influence over the price of horses. Recently, at a public sale, I saw some splendid young stock offered, absolutely desirable in everything but size, and the bidding was enough to open the eyes of the most obstinate breeder of small horses. A fine yearling sold for little more than the fee on his sire; as promising a 2-year-old as I have seen in years—except in size, and both sire and dam are small—sold for little over \$50—not much more than double the sire's insurance. They were well bred but of a small breed; also they were in fine selling condition.

A sin against horseflesh practiced by many farmers, laboring under a mistaken idea of economy, is not feeding the colt what is necessary for building a powerful frame for the future horse. I believe in good wheat bran for colts. I am convinced that bran fed colts will make horses that will be less liable to diseases of the bones and that will have better wind.

A good colt grain is two parts oats to one of wheat bran, with a taste of oil meal occasionally. Remember that it takes a quart of bran to weigh as much as the corn from an average ear and that weight—not bulk—is the proper measure for feeding. Generally speaking, colts are better without corn, as it will not help their development and may make them sluggish, if nothing worse.

Also, many farmers feed too much hay, straw, etc., to both horses and colts. Not long ago I saw a farmer offer a pair of very fair 3-year-old grade Percherons at public sale. He had to withdraw them at below two-fifty for the pair. The only objection to them was that they had been kept stuffed with roughage until they were about all paunch. It hit the farmer two ways—he wasted the feed and destroyed the value of his colts.

In the last year I have known several farmers to refuse from \$60 to \$75 for colts under ten months—size or supposed indications of speed induced the offers—

from very common grade mares. I would have sold; because, from the time the offers were made until the colts can earn their keep they will cost every cent they will be worth at working age, meaning a loss of \$60 to \$75 per colt.

This reminds me of a mistake I often notice on dairy farms—I am not writing for expert horse breeders or dairymen, but for those who are trying to become either—and that is, selling calves after they are several months of age.

I have seen even promising pure-bred heifers, from four to nine months of age, sell for only \$7 and \$8 more than they would at three or four weeks of age, and grades at a gain of not more than \$2 or \$3 over the veal age; and these were not exceptional cases. For myself, nothing could excuse such bad judgment but an unavoidable extremity

of having a lot of fine pasture going to waste during these first months of growth and then finding myself short of winter feed.

If a farmer intends to work up to pure-bred cows—I suppose every farmer-dairymen has that desire—he will seldom wish to raise a grade calf to beyond the veal age except an occasional one promising unusual size or milking qualities. If he keeps them beyond the veal age and sells them before they come in milk he must lose money unless he strikes an easy mark in the way of a purchaser.

Usually, the same applies to pure-bred calves, for, if we are breeding for market, we will study the points of conformation and coloring and if they do not come up to our standard we will not waste time, stable room and feed on that

calf; anyway, not beyond the veal age. In producing pure-breds for market we must remember that the men who are willing to pay fancy prices are more interested in color markings than in milk producing indications; of course, it must be supported by a registered pedigree, but pedigree and producing qualities alone will not disturb the bank balance of the careful buyer. For that reason when we are breeding for top prices we must breed for perfect marking and color as indicated by the breed.

In the grade market size continues to exert the greatest influence over prices. I would not raise a grade calf unless I had every cause to believe it would develop into a large cow; because, even if it proved to be a poor milker, if it had size I could always sell it at a fair price.

Maryland.

A Great Increase in Railroad Wages Means Higher Freight Rates and a Burden on Agricultural Prosperity

Do you think the railroads ought to increase the wages of their highly paid train employees \$100,000,000 a year?

No great increase in railroad wages can be made without directly touching your pocketbook. Out of every dollar you pay the railroads 44 cents goes to the employees.

Compare the wages of these men (who have refused to arbitrate their demands for higher wages, and are threatening to tie up the country's commerce to enforce them) with those of other American workers—with yours.

On all the railroads in 1915 three-quarters of the train employees earned these wages:

	Passenger		Freight		Yard	
	Range	Average	Range	Average	Range	Average
Engineers . . .	\$1641 3983	\$2067	\$1455 3505	\$1892	\$1005 2445	\$1526
Conductors . . .	1543 3004	\$1850	1353 2932	\$1719	1055 2045	\$1310
Firemen . . .	943 2078	\$1203	648 2059	\$1117	406 1633	\$924
Brakemen . . .	854 1736	\$1095	755 1961	\$1013	753 1821	\$1076

You have a direct interest in these wages because the money to pay them comes out of your pocket.

Low freight rates have given American farmers command of the markets of the world.

With two-thirds of the cost of operating railroads the wages paid labor, any great increase in labor cost inevitably means higher freight rates.

A \$100,000,000 increase in railroad wages is equal to a five per cent. increase on all freight rates.

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In This Issue: Electricity on the Farm

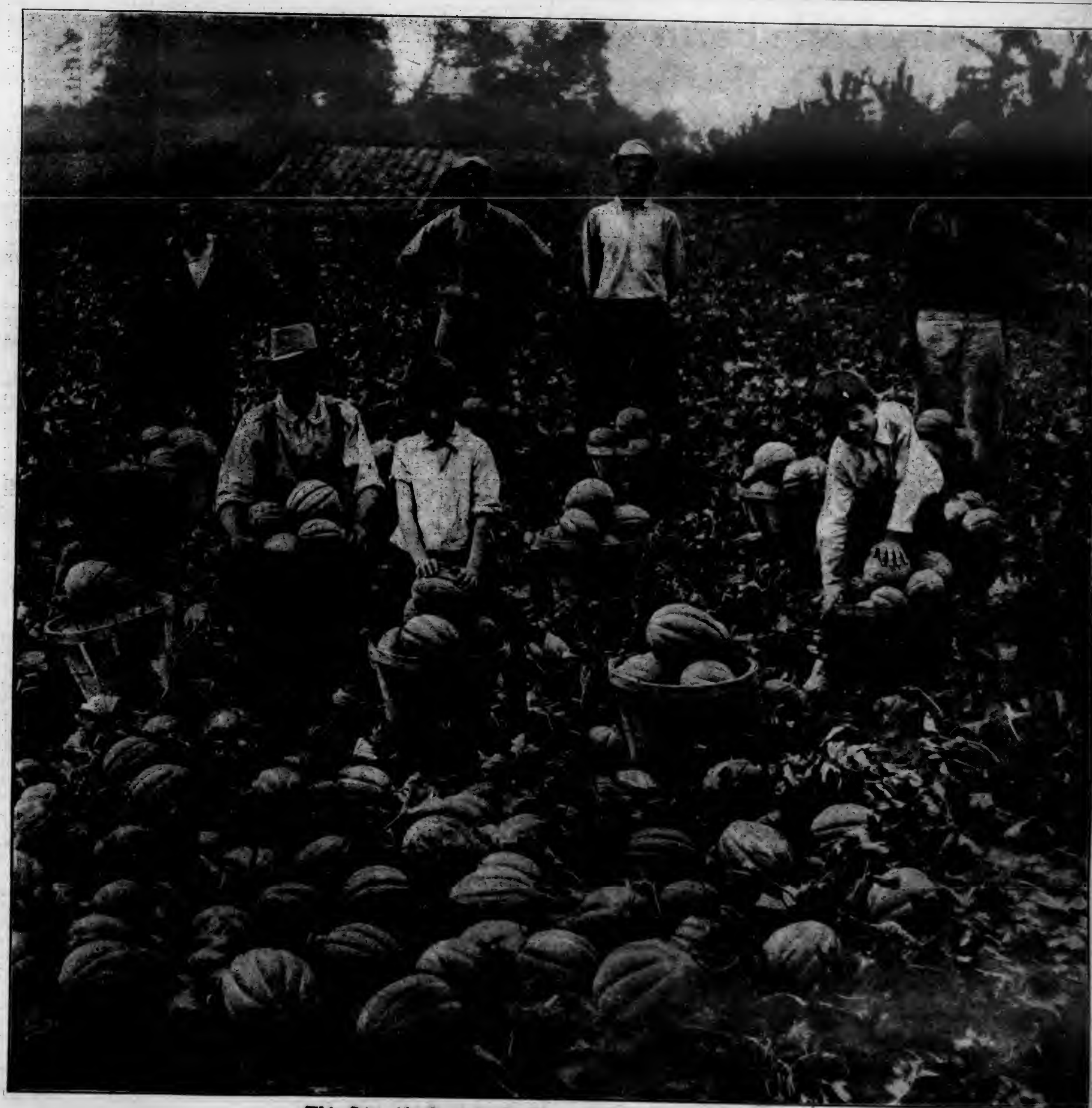
The Practical Farmer

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3 Years for \$1.00



This Season's Cantaloupe Crop on One New Jersey Farm

Butter, Butter-Fat and Overrun

By H. H. DEAN, Author of "Canadian Dairying."

Since the advent of the creamery and the Babcock test in America, it has become very necessary that dairy farmers who sell their cream to a creamery and are paid for it on the basis of the "butter-fat" contained, shall understand clearly the difference between "butter" and "butter-fat," and what is meant by the term "overrun." So long as each farm made the cream produced on the farm into butter, there was no great need to worry over creamerymen's terms, but as soon as a farmer enters the creamery field it is very important that he shall know the language of the creameryman. Two men, each talking a different language unknown to the other, are not likely to get on very well in bargaining. Or, in case two persons talk the same language, but use different terms in estimating values, to make a bargain is difficult. For example, when an American dealer, who uses the decimal currency, begins a deal with an Englishman who computes values in pounds, shillings and pence, matters are at a standstill until some common denominator is adopted—either the dollar must be converted into shillings or the pound must be standardized into dollars and cents. The trade of the world among the leading nations is based on what is called the gold standard of currency. Without some such standard, trade among the nations would be very difficult. Trade practically dominates the nations at present. Most of the great wars have been "trade wars." A favorable "balance of trade" is desirable for

any and all progressive countries. In a similar way, different parts of the same country trade with each other. The Northern and Western States trade wheat and dairy products for cotton and tropical fruits of the South. A dairy farmer "trades" his cream to a creameryman for gold, or its equivalent in gold, in the form of paper currency. In all "trades" it is essential that the basis of trading shall be fair, and favorable for both parties. No system of trading can continue for any great length of time unless characterized by honesty, or, "a square deal" is given. Because of lack of understanding of terms, sometimes the cream producer has not received "a square deal" from the cream buyer. The most common misunderstanding on the part of the farmer who sells cream on the basis of fat test, is that he thinks "butter" and "butter-fat" are synonymous or like terms—terms meaning the same thing. Consequently, when the cream buyer announces that he will pay a certain rate per pound fat, say 30 cents, too often the farmer says, "Why, that is more than I can get for butter, and look at the work saved by selling cream!" However, if he be of an investigating turn of mind, he will probably churn half of a lot of cream ready for sale, and if he is a good workman, he will find that he is able to make considerably more pounds of butter than the pounds of fat he is paid for by the cream purchaser. Then he is inclined to say that the cream buyer cheated him, or robbed him of several pounds of "butter." Not necessarily so. It may be a case of not understanding the use of terms. One party is thinking and calculating in terms of "butter," the other of "butter-fat."

In order to understand the difference in meaning of the two terms, it is necessary to know something about the composition of butter. Unfortunately butter varies in its composition, but usually we may say that 100 lbs. of butter will contain from:

80 to 84 lbs. fat
12 to 16 lbs. water
3 to 4 lbs. salt
$\frac{1}{2}$ to 1 lb. curdy matter

In order that the purchaser may be protected against the purchase of fraudulent goods, or goods which do not come up to a certain standard of composition, the governments in nearly all dairy countries have adopted a standard which requires that the butter sold, or offered for sale, shall not contain more than 16 per cent. of water. In some countries a minimum standard of fat, about 82½ per cent., is also required.

If we look at the table of butter composition, we see where the trouble or confusion arises with reference to "butter" and "butter-fat." In 100 lbs. of average butter there are not more than 80 to 84 lbs. fat, and we also see that from 16 to 20 lbs. of the 100 lbs. of butter are made up of things other than fat—water, salt and curd, which are mixed with the fat to make what is commonly known as butter, in the trade.

This excess of butter over fat in milk or cream is known in creamery or butter maker's language as "overrun," and is usually expressed in the form of percentage. For instance, if during a day a butter maker or creameryman took in 5000 lbs. fat in the cream delivered, and made from this cream 6000 lbs. of butter, his "overrun" is calculated as follows:

The "overrun" equals 6000 minus 5000 equals 1000.
On 5000, or fifty hundred, the "overrun" was 1000.
On 100 equals 1-50 of 1000 equals 20.

Consequently, he speaks of his "overrun" for the day as being 20 per cent. However, the "overrun" is not constant. It varies according to the condition of the cream, the skill of the butter maker, whether butter is made into prints or packed as "solids," how long it is kept before marketing, whether or not the package "leaks," and various other factors. On the average, the butter maker figures on a 16 to 20 per cent. "overrun" from cream, though some claim to get a 25 or even a 30 per cent. "overrun." Some have an "underrun"—that is, less butter than there is fat credited to patrons, which, however, is not likely to occur very often, except in co-operative creameries where the butter makers and drivers are careless or incompetent.

We are now able to see why a person churning cream may be able to make 16 to 20 per cent. more butter than he is credited with fat by the cream buyer. We are also able to understand why the creameryman is able to pay as much per pound fat in cream as butter sells for per pound, because with good creamery management and in a fair-sized creamery, the "overrun" will pay the expenses of manufacturing the butter.

This works out as follows in a creamery where the "overrun" averages 20 per cent.:

For each 100 lbs. fat purchased the manufacturer has an excess of 20 lbs. butter. If butter sells for 30 cents per pound the "overrun" is worth 20X30 equals \$6.00, on every 100 lbs. fat delivered, which will amply cover all expenses in a moderate sized creamery and leave a fair margin of profit besides. To the large creamery, of course, the "overrun" is a bonanza, because the expenses per pound of butter are very much less in a large business than for a small butter plant.

WHO SHOULD OWN THE OVERRUN?

A very interesting question has arisen, "To whom belongs the 'overrun'?" There has been much speculation on this point and farmers, as a rule, are not at all clear as to whether they should have the excess of butter over fat, or whether it belongs to the creameryman.

This depends on circumstances. If the cream buyer, whether creamery owner, cream agent, or any one else, purchases the cream outright at a stated price per pound of fat, then the "overrun" belongs to the cream buyer and the seller of the cream has no further interest in the matter, except to see that he gets honest weights, correct tests and prompt payment for goods delivered.

On the other hand, if the cream, or milk be sent to a creamery where the cream or milk is made into butter at a certain rate per pound of fat or butter, then the "overrun" belongs to the farmers or patrons, unless it is specified that the manufacturer shall receive the "overrun" as part or entire pay, for manufacturing the milk or cream into butter.

This leads me to say that we consider it not good policy for the milk and cream producers to allow the manufacturer to take the "overrun" as part, or all pay for making the butter, except where the milk or cream is purchased outright as previously explained. Human nature at its best is very weak. Whether or not we believe in the doctrine of "original sin," we can't help but conclude there is considerable truth in David Harum's philosophy, "Do unto the other fellow as he would do unto you, but do it to him first." In other words, when the manufacturer receives the "overrun" as his share (part or all)

(Concluded on page 334)

Does Any Little Farm Girl Want this Doll—Free?



This is "Little Miss Prim." She is a beautiful paper doll, just a foot high, and she has four hats and four dresses—four changes of costume, all in the most exquisite taste and coloring—masterpieces of the lithographer's art. All children love dolls that they can dress and re-dress.

Here is the prettiest paper doll you've ever seen. "Little Miss Prim" is made of fine, stiff cardboard and her body is fitted with a stand, so that she can be stood upright. Both she and her hats and dresses are all cut out—all ready to play with—no work for parents at all—and any child from 3 years up, can easily put them together.

I am ready to give one of these beautiful dolls to any little farm girl free, so long as my supply lasts, in return for a few minutes of her time—and practically no work.

Just fill out this coupon and mail it to me today and I will tell you how you can earn "Little Miss Prim" for your own. Do it now for I can't get more of these dolls when the supply I have now is gone.

M. D. GORE

P. O. Box 1321, Philadelphia, Pa.

M. D. GORE,
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I am a little farm girl and I want "Little Miss Prim." How can I get her?
(Write your name here plainly)

(and address below)

P. O.

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A TWICE-A-MONTH JOURNAL of practical, every-day experience for, and by, men and women who take their living from the soil.

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Number 17

Electricity on the Farm—II

How the Conley Farm was Equipped

By ALFRED E. WALLER

FIRST of all, we want to repeat a statement made in the last article—electricity has come to stay on the farm. If the truth bears repeating, this may be said over and over. People are getting to realize more every day that comfort is one of the necessities of life and not one of the luxuries. Good light is one of the most important items of comfort. The up-to-date farmer and his wife have to do a great deal of reading to keep abreast of the times—with plenty of light wherever and whenever it is wanted, this reading becomes more than ever a pleasure.

This article is illustrated with photographs of an electrically lighted farm, taken a few days ago by kind permission of the owners, Mr. and Mrs. E. V. Conley. The farm is located on high ground near Green Village, N. J. It has unusual natural advantages, with deep, rich soil, good roads and a fine view across the neighboring valleys—and Mr. and Mrs. Conley have equipped it with an electric plant to match. Mrs. Conley told the author that she had first become interested in electric lights for the farm through hearing of the work done by Thomas A. Edison in his laboratory in Orange, N. J., about twenty miles from Green Village. She read a good deal about Mr. Edison's new alkaline storage battery, and finally began to investigate all the available farm lighting systems, with the idea of getting one perfectly adapted to the Conley farm. The house was wired, meanwhile, with a good many more outlets than actually needed, because, as Mrs. Conley said, they did not know which ones they would want to use, and thought it best to have plenty.

The lighting plant was finally selected, and an engine was ordered large enough to supply power for the dynamo, and pump water besides. A steel water tank of 1000 gallons capacity was installed in the cellar of the house, and water is pumped into this against air pressure, so that even the top floor rooms are abundantly supplied with water at good pressure. Mr. and Mrs. Conley built a small power house themselves, and Mrs. Conley built the concrete foundation on which the engine rests, single-handed. When the switchboard and battery arrived, they were installed as shown in Fig. 1, and wires were run through an underground pipe to the house. Wires of this kind are usually run overhead, on poles, but they are perfectly safe and efficient in an underground pipe, and do not mar the scenery.

The pipe in which the wires are installed comes through the cellar wall right near the stairs leading outdoors. At this point the main wires branch into several circuits. The branch circuits go to convenient points in the house, and there connect with the fixtures. Fig. 2 shows an interior view, taken in Mrs. Conley's sitting room. The door at the left leads to the hall, and the dining room beyond; the other door leads into the rear hall. Several types of fixtures are shown in this view, the wall bracket type, which is ornamental, and at the same time very useful for general lighting of a room; the open light over the living room table, which is just right for reading, and the artistic chandelier fixtures. The chandeliers in the hall and dining room were made by Mrs. Conley's daughter. Like her father and mother,



Figure 1

electric light. Starting with the electric fixtures themselves, it is well to bear in mind that they may be fastened anywhere, in any position, or may be arranged for moving about, like an oil table lamp, by simply having a length of wire attached. The electric lights do not have to be cleaned, trimmed, filled

and looked after, like lamps. No matches are necessary. The switch which controls the lighting of a room may be put right near the door, and it is only necessary to press the button to get light. This means no smell, no dirt and no fire risk. It is practically impossible to start a fire with a properly installed electric outfit, but it is not hard to start a blaze with the best oil lamp ever made. The freedom from fire risk is even more important where the barns are considered. Once a barn is wired for electricity, it is no longer necessary to carry a lantern. Turn a switch at the door, and you can see the whole length of the cow barn at once. If the trolley of the power hay fork jams, you don't have to work at it in semi-darkness—an electric light on an extension line will go anywhere a man can go, and a good many other places, besides.

Electric light is worth considering, too, as a means of protection. It is not at all difficult to arrange a switch so that the barn or chicken house lights can be turned on from the house. If a chicken house can be illuminated at the first sign of a disturbance, the farmer is more apt to land his shotgun-load of rock salt where it will do the most good, and the chicken thief is less likely to try the game again. No matter how you go at it, electricity wins in fair comparison with any other kind of lighting. And one of the biggest reasons is that you can get the light just where you want it, free from annoying shadows. Long before electric equipments for farms were available the author had a workshop on his father's farm, where he built and repaired wagon bodies, chicken coops, pumps, and all the rest of the farm equipment in the long winter afternoons. Oil lamps and lanterns supplied the necessary light, and answered the purpose, for the work was done. But one or two electric lights with good reflectors back of them would have made things so much easier! And, with these, a motor or two! The author knows from experience that the knives of a 6-foot cut McCormick mower can be ground on a two-leg-power "bicycle" grindstone, but doing a job of this kind is not his idea of having a good time. The work can be done better and quicker with the grindstone belted to a half-horse power motor, or to the gas engine itself.

And so on through all the farm work. Electricity is the proper hired man to have—with a storage battery which can be filled with electricity at some convenient time, power is always on tap whether the dynamo is running or not. There is no technical knowledge required, and the up-keep of the plant is a small item. Mrs. Conley's grandson, shown at the switchboard in Fig. 1, is the engineer on her farm, and has no trouble at all with his little power house. Eight hours charging once a week keeps the battery up to the minute, and water for household use is pumped into the supply tank while the first part of the charge is in progress. Another point worth mentioning is that the owner of a farm lighting plant can charge his automobile storage battery whenever he finds it necessary. The manufacturers of farm lighting plants are glad to explain how this may best be done with their equipment.

(Concluded on page 330)



Figure 2

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SEPTEMBER 1, 1916

The Tail Wags the Dog

AS we go to press the battle being waged between the railroads of the country and a portion of their employees that may result in a strike which would tie up the commerce of 100,000,000 people, is still centered in Washington, with the President endeavoring to act as the go-between and peacemaker. Whether or not the President succeeds in bringing both sides in the controversy to terms that will avert a strike, public attention is being called to the fact that the power to paralyze the industry of a prosperous nation is, under existing laws, in the power of a comparatively small proportion of its citizens. This presents a condition that few of us have ever realized and which is not only startling, but rather terrifying to those of us who have put our all, both of means and effort, into the production of crops or other commodities with the hope of being allowed to gain a living out of the result. That legislation is necessary to correct this state of affairs is evident to us all, and we as a people should insist that the recurrence of a situation such as the present one shall be forever removed from the realm of future possibility. The unfairness of the labor element which makes demands that on the face of them seem unreasonable and absolutely refuses arbitration, is apparent; this stand against arbitration is turning public sentiment (which ordinarily is with labor at the start of most of its disputes with capital) against "the brotherhoods"—and without public opinion in their favor their cause is foredoomed; nevertheless they seem to have it within their power to bring calamity upon a whole nation before the issue is decided. A law must be enacted which will compel the acceptance of arbitration in disputes between public service corporations and their employees in the future.

Reclaiming Land and Boys

IF this season's crops bring us in a little extra money—and it looks as if the unusually good yields in this section of the country and the poorer yields in practically every other section will give Eastern farmers for the most part an unusual degree of prosperity—wouldn't it be a good idea to invest a little of the "surplus" in clearing up and putting in tillable condition—reclaiming—some of those waste acres that most of us have in a greater or lesser degree on our farms? One of the things that most impresses us in visiting the rural sections of European countries is the economy of space—the utilization of every foot of available ground—which is in strong contrast with the wastefulness—the prodigality—of American farmers. If profits are good this season, let's clear the way for more profits by adding to our productive farms the land that is now covered with stumps,

boulders, swamps and other impedimenta to economic farming.

A manufacturer, interested in increasing land values on American farms and the reclamation of the millions of acres of land going to waste in this country, has hit upon an interesting plan to unite this waste land reclamation with the movement to educate the farm boys and keep them on the farms. This manufacturer is offering cash prizes to boys in every section of the country for the best record made between now and December 1, 1917, in the reclamation and cropping of one acre of what is now waste ground—"a bad spot"—on the farm. We heartily commend this plan to the farm fathers whose homes we reach, and will be glad to hear from such as are interested in a proposition of this sort.

Here is a chance to make a man of your boy, to give him an interest in the farm and at the same time to put into useful service land that is not practically valueless. Pick out a few acres of waste land, stake the boy with the money necessary for its reclamation (and in many cases the amount necessary will surprise you by its smallness upon investigation) and then buy back the reclaimed and cropped land at its increased value; by doing this you will give the boy a chance to make some money, awake a new interest in his life and besides making a substantial increase to your tillable farm you will find you have made, as well, a farmer. This is one way to keep the boys on the farms and at the same time make ours a more productive country agriculturally.

Sheep and Dogs

IN an editorial in the August 15th issue of this paper under the caption, "More Sheep Needed," we commented on the decrease in the production of wool in this country and the shortage in the supply of lamb and mutton, with the correspondingly high prices of these meats, and told of a movement launched by the Philadelphia Wool and Textile Association to increase sheep raising on Eastern farms. We presume the majority of our readers place one great objection—one argument—against all we had to say in favor of this movement and our statement that sheep in some quantity can be raised with profit on nearly every Eastern farm, and that one objection could be put in a single word—"dogs."

There is no question but that dogs are the greatest menace to sheep in the East, and in all other populous sections of the country, but that this is so we contend is largely the fault of the farmers themselves, and this objection could be overcome and the sheep raising industry established on a profitable basis if the farmers would take a firm stand against dog lawlessness. Nearly all our Eastern States have laws for the protection of farmers and their sheep against losses from dogs, and the trouble is not so much in the inadequacy of the laws as the utter laxness of the officials in their execution.

Here in Pennsylvania we have a dog law that should afford ample protection—frequent statements to the contrary notwithstanding. Granted that the Pennsylvania statutes on this subject may be crudely drawn, and as amended are somewhat confusing, but they are not unconstitutional (as some of the officers entrusted with their execution would have us believe); this we are told in a pamphlet recently issued by the Attorney-General's Department of the Commonwealth of Pennsylvania, entitled, "The General Statutory Law Relating to the Taxation of Dogs and the Protection of Sheep and Certain Other Domestic Animals, Officially Construed and Harmonized by the Attorney-General's Department." If our Pennsylvania farmers do not know just what this law is, they should send to the Pennsylvania Department of Agriculture, Harrisburg, Pa., for a copy of this pamphlet and study it carefully.

The statutes of most of our Eastern States, like those of Pennsylvania, require that the owners of dogs shall pay an annual tax on them and that dogs not bearing, affixed to their collars, tags showing that this annual tax has been paid shall be killed; the ownership of tagged dogs can be readily established and these owners are liable for damages for sheep their dogs kill. It is undoubtedly true that in many districts these laws are not fully lived up to, and in some cases entirely ignored, but beyond a doubt if the farmers would appeal to the proper officials and insist on the full enforcement of the law they could obtain relief from the dog nuisance to a very large degree.

In Pennsylvania the County Commissioners are made the executors of the dog statutes; if you, Mr. Farmer, want to keep sheep and are prevented by the

fear of loss from dogs, you and your neighbors should get together on this matter, and, either in person or by petition, appeal to your County Commissioners jointly to see that the laws are properly enforced; if your request does not meet with a ready response take the subject up with the editor of your local paper; tell him that the farmers of his neighborhood are kept out of an industry which would prove profitable to them and of benefit to the whole community by the failure of the officials to execute the law, read the law to him, and ask him for his help in getting action on the matter; then stir up similar action in other sections of your county. Do you believe that your County Commissioners, who are dependent upon your and your neighbors' votes for their re-election, will long resist the resulting storm?

We all know that the dogs which kill our sheep are not, for the most part, the valuable blooded dogs owned by responsible men of our neighborhood, but by the stray dogs—the mongrels of the community; the man who values his dog sufficiently to pay a tax on him and who knows that he will be held responsible for the damages caused by his dog, will keep the animal shut up when not under personal control, but the dogs that do the damage generally are those whose owners do not care enough about them to pay a tax and have no fear that they will ever be called on to pay for the dogs' depredations. Accordingly, the thorough enforcing of the law in the collecting of dog taxes and the killing of all dogs on which taxes are not paid, will quite effectively protect your sheep. But if this should fail, new laws should and can be put upon our statute books by the direct demand of the farmer that this important industry, which means meat and clothing to the community, be protected.

"Let Us Have Light"

A WOEFUL lack in a large proportion of the farm homes of this country is an adequate system of illumination, and that this is so is a reproach to the business sense of our farmers; for there are illuminating systems of many kinds and at many prices, and there are few farmers who read this paper who cannot afford to spend the needed money to add to the value of the evening hours in their homes, to increase the comforts of their families and decrease the work of the women of their households in the care of the old-fashioned and inadequate lamps.

An electric lighting system in the farm home is fine for such of our readers as have the space and means for its installation, but the fact that a farmer cannot see his way clear to install electricity on his farm is no reason why he should not have good light in his home. There are acetylene, gasoline and oil lighting systems which are away in advance of the old-fashioned lamp, both in point of illumination and economy, and these may be installed at a cost well within the means of any of us. Late fall and winter evenings are the time for study, reading and social enjoyment and in all these poor illumination is a serious handicap. The old time oil lamps are discouragers of study and the improvement that comes with reading, and a damper on social pleasure. Don't let another winter go by without brightening up the farm house as it should be brightened.

Right now is the time to take up this question and decide what improvements you will make in your lighting facilities. It will need some study, some comparison of prices, some consideration of ways and means. Get at it before the long evenings are upon you, so that when they come you will have the light to make them brighter. In February, 1915, we had a Women's Exchange on "Lighting the Farm Home," from which we received some valuable suggestions from our farm women. This year we want to hear from the men as well as the women on this subject; accordingly, we have given out this farm lighting subject for the Experience Pool in our Oct. 1st issue, and we hope to hear the experiences of many for the benefit of all our readers.

Of special interest in connection with the Experience Pool on page 331 of this issue is Professional Paper No. 335, issued by the United States Department of Agriculture on "School Credit for Home Practice in Agriculture." Our readers who are interested in this subject of rural education will do well to send to the Department at Washington for a copy of this bulletin, which, though primarily intended for the use of superintendents and teachers of rural schools, contains helpful suggestions which should be of value to our readers in their effort to improve the rural schools.

Producing Clean Milk for Babies

By A. E. RICHTER

Near Beloit, Wisconsin, there is a certain Methodist "sky pilot" who produces pure milk for babies. The Rev. W. J. Dougan had enough of this world's goods to obtain title to 115 acres of God's green earth; coupled with this he had the desire to become a farmer. He started operations with a cow, a horse, and a hoe. It was the cow that won the race and brought success and prosperity to this Methodist preacher. And he has prospered.

Starting with the fixed purpose of eventually producing the best and cleanest milk possible, this preacher is today known in Beloit as "The Babies' Milkman." Mr. Dougan is now milking about thirty cows out of a herd of fifty, and he receives 10 cents per quart for his milk and 40 cents per quart for cream. In 1907 he had one cow, a family pet. The story of his success reads like a romance and it is not only interesting, but shows what purpose and perseverance can do when they are controlled by the right man on the right land. Mr. Dougan says that his greatest pleasure in farming comes from the fact that he feels that his harvests, wrought with his own hands on his own land, have divine approval. That each day in his work on the farm he is contributing something to the world's well-being. The dollars he is proud of are those he has made by growing crops and by producing clean milk for babies, and he says, "Verily, my friend, the hand of God is in the increase of the fields."

In asking Mr. Dougan to tell me of his experience, he said, "You know I am a Methodist preacher, and if there is anything Methodists excel in, it is in experience meetings. We started farming nine years ago with a cow, a horse and a hoe, with a fixed purpose of producing the best, cleanest milk possible, and to retail in our city, Beloit, at the minimum price that would yield the producer a living, give to his family and to his help time and opportunity to live."

"In working out this purpose we found extreme perseverance necessary. Our first problems were to secure equipment, the first crop and a suitable herd to start our business. This work took us a little over a year. Then we started the marketing end of our business. We began delivering milk on May 1, 1907, to one customer at 5 cents a quart. The second day we sold three quarts. The output the first month was \$70. The second month the sales were \$120. Today we are milking thirty cows."

"Through the help of the bacteriological department of our experiment station, I was enabled to find out the quality of milk I was able to produce, and should produce. In a short time I realized that I could not produce a high quality of milk at 5½ cents per quart. Therefore, I asked my customers to pay 6½ cents per quart. I held my price at this rate as long as I could, but realized that sooner or later I would have to charge more, and I hated to do it."

"I was not in a position to risk a slump in my trade, so I adopted a peculiar method. Every new customer I took on I charged them 8-13 cents a quart for milk, holding the price to my old customers at 6½ cents. You may think that this was double-crossing my customers, but both old and new customers were told frankly of the arbitrary prices and why they were necessary. I held these prices for several months and my waiting list was growing constantly larger. Finally I raised the price of milk to 8-13 cents per quart to all, and my business kept right on growing. "In 1910 I again raised my price of

milk to 10 cents a quart, and for cream, 40 cents, holding the price of skim milk down to 3 cents a quart. I held the price of skim milk down because I found many families who could not afford higher priced milk and to whom this clean article of food for family use was a boon. They can give the baby all it wants of Dougan's whole milk and be absolutely safe, as far as the milk is concerned."

"Now, do not misunderstand me. I did not raise the price of milk because I felt that I could get more and would make a larger profit. Every bit of the increased revenue has gone into increased efficiency in the producing plant. I have always held that if a dairyman is willing to increase the purity of his product, give better and richer milk, and handle it in a thoroughly sanitary manner, consumers are willing to pay the increased cost of production. I have found my theory true in practice."

"If I produced milk today in an old-fashioned, dirty barn, if my cows were allowed to go without being regularly tested, if, during the summer, flies could breed in my milk cans, in the milk house and in the barn, or if people saw a filthy barnyard, a manure pile half as high as the barn, do you suppose for one minute they would buy milk of me and pay a premium for it. No, sir; and the fact that I am a preacher would make it all the hotter for me. Yet those conditions exist on many farms today, and seemingly, people think nothing of it."

"Take a herd of cows in the early summer, turn them out to pasture and leave them out. What happens? They keep themselves clean, absolutely. Their flanks are not covered with filth, nor do they lie down in it. The 'Master Designer' did not make animals to live under unhealthy conditions, any more than he made man to live in insanitary places. You can not expect a cow to produce maximum results if she is kept in insanitary surroundings, even though

her feed rations are right. Fresh air and clean, pure water, have as much to do with the production of milk as has good food."

"In building our barn we first saw to it that the ventilation and lighting properties were perfect. Sunshine and fresh air are great assets in producing pure milk. Next came the comfort of our cows. Look at them now, contented and peaceful, chewing their cuds, resting, apparently doing nothing—except making milk. Now then, these steel stanchions and stalls cost money. More than I thought I could afford, but since we have had them installed, our animals have shown a marked increase in production, and with milk at 10 cents a quart, that means that barn furniture pays dividends. Again, tight-fitting screens and screen doors on the barn during the fly season, are another asset. All of these things that go to make up a model dairy factory, do cost money but they are worth while, not because

(Concluded on page 335)



To Light Your House and Barn To Cook Your Meals

Ask the good woman who cooks on a carbide range and lights her home with carbide lights—She will tell you that Union Carbide is doing more for country home folks and country home life than any discovery or invention of this age.

She will tell you that her Carbide-range has added to her health and happiness by shortening her kitchen hours and by making her cooking a much simpler and easier task.

She will tell you that the range is a practical duplicate of her city cousin's gas range and that she turns the fire off and on with a twist of her wrist—saving all the time and doing away with all the bother and dirt connected with handling fuel and ashes.

She will tell you that all these advantages are the biggest kind of a help towards keeping both herself and her kitchen clean and cool during hot weather months.

She will tell you that her carbide lights in every room and out on the porch are the cleanest, whitest and most beautiful lights in the world.

She will tell you too, that all these lights are equipped with "friction igniters" to "light up" instantly with the pull of a little ornamental brass wire rod.

She will tell you that the handsome bronze and brass fixtures and the brilliancy of the light itself, has doubled the attractiveness and beauty of her home. You must ask, too, the man of the house about Union Carbide itself—

He will tell you that in weight and bulk Union Carbide is quite like coal—that he gets his supply at factory prices, and that he gets it direct from the company's warehouse in his district.

He will tell you that his Union Carbide comes in blue and gray 22 inch—hundred pound "drums" (cans)—easy to handle, easy to store.

He will tell you that he keeps a six month's or a year's supply on hand in a corner of his barn or shed.

He will tell you that he, himself, not only comes in for his share of the benefits of the range in the kitchen and the lights in the home but he has his own carbide lights throughout his barns and in the center of the yard round about—big brilliant ball lights operated the same as the house lights without matches.

He will tell you also that the double benefits of both lighting and cooking make Union Carbide by far the most economical and desirable lighting and cooking service for country homes.

And he will tell you that the best proof that this is all so is the fact that he is only one of over 300,000 country home users to whom we now supply Union Carbide in the little blue and gray drums.

Send this coupon for our handsome advertising booklet giving complete information—with many illustrations.

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THE GARDEN

Edited by W. F. MASSEY

All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

Growing Early Cabbages

The middle of September is the best time to sow seed of the Early Jersey Wakefield cabbage for early spring use. From Baltimore southward these plants can be set in the open ground for wintering over, while farther north the fall sown plants can be set thickly in cold frames and winter over for spring setting if the plants are exposed as much as practicable to the open air and kept in a hardy state. This was formerly largely practiced even by the New York growers, but of late years the Northern growers have found it best to sow in hotbeds in early winter and they now prefer these plants.

But around Baltimore there are still many set in November and there has been a change of the practice farther south. Formerly, and still to a great extent, the practice has been to manure furrows heavily, and throw a furrow over from each side, making a sharp ridge; then in November the plants are set along the base of the south side of the ridges which run east and west. This will answer in northern Maryland and Delaware, but farther south I found that this setting on the south side resulted in much loss, for we have many warm spells in winter and the plants would get to growing and a return of cold would do serious damage. Then, too, on the south side of the ridge the plants are exposed to the winter sun, and the sun suddenly striking the frozen plants, would do more harm than the degrees of cold.

I then changed to setting on the north side of the ridges. There the plants were kept dormant and sheltered from the sun, and did a great deal better. Then one of the Southern experiment stations made a test or setting on the south side, one on the north side and in open furrows. They found that the plants lived better on the north side than on the south side, and still better in open furrows.

Now the best practice is to manure the furrows as usual, make the ridges and then open a furrow in the middle of the ridge and set the plants deep enough to cover the entire stem. Treated in this way here the cabbage plants live well, and some of the more hardy lettuce plants, like the Hanson, can be set between the cabbages and winter over for heading before the cabbages need all the space.

The furrows shelter from cold winds and morning sunshine and the plants will be found right on the surface in spring when the soil is pulled away and cultivation begins. At that time the crop will be much benefited and hurried by applications of nitrate of soda along the rows, and the crop can be gotten off early and followed by later crops.

Get the Frames Ready for the Fall and Early Winter Lettuce Crop

In nearly every part of our territory the Christmas crop of head lettuce can be grown in cold frames, but many do not realize the amount of manure and fertilizer both that are demanded by good head lettuce. I sow the seed in the open ground early in September. The frames are prepared by stuffing the soil with manure that has been piled and turned and rotted all summer through and is now a mellow black mass. The soil in the frames is made black with this, and the plants are set,

of the Big Boston variety, 8x10 inches; a smaller heading variety, like the Tennis Ball, can be set 6x8 inches.

Then as soon as the plants start to grow I apply nitrate of soda between the rows, about three ounces to a 3x6-foot sash. The sashes are put on as soon as the nights get frosty, but care is taken in airing in all sunny weather. Before the plants meet across the rows another dose of nitrate of soda is applied to hurry them up, and the soil is kept stirred and clean.

Watering must be attended to if rain does not come often enough for you to open up and get the bed watered by the rain, for dry soil will finish the lettuce crop, and too high a temperature will draw it up and delay the heading. This crop should come in for Christmas and New Year. Then if you use the double glazed sashes, as I do, you can sow radishes and beets in the frame, and plant another frame to winter over and head in spring. For this crop the lettuce seed may be sown in rows and thinned out, but it is better to have plants ready from seed sown under glass in October. A far more uniform stand can be had from transplanting than from sowing seed where it is to be grown. A great deal of winter gardening can be done in cold frames well banked on the outside and, if single sashes are used, covering them with straw mats in cold weather. I have grown and headed lettuce well all winter in frames in a section colder than Philadelphia, where I had battened shutters to cover the glass in zero weather.

Garden Notes

The spinach sown in August for fall use should be kept well cultivated, and a little sprinkling of nitrate of soda along the rows will give good results in the crop. I always sow the Norfolk Savoy Leaf variety. The crop for wintering over for late winter and spring cutting I sow in September broadcast and rake in the seed, the soil being, of course, well fertilized. For this purpose I use raw bone meal liberally, and as the weather gets cold the patch is top-dressed with stable manure, not heavy enough to make a smothering cover, but enough for some protection and feeding in spring.

Some growers make another sowing in very early spring, but I have found that the spring sowing runs to seed just as quickly as that wintered over. In cold latitudes, of course, it is best to make a spring sowing when the fall sown fails to winter well. But spinach is a very hardy plant and seldom gets killed entirely from New Jersey southward. I sow the late crop broadcast because I find that it winters better than in rows.

The later growing turnips are best sown in August, but any of the flat, strap-leaved sorts will do very well from September sowing. The earlier in the month the better, though the Milan varieties will make a crop sown almost any time in September. If not sown in August, sow seed now of the Celestial radish, the best of the Chinese varieties. These make very large roots, and can be kept good and solid all winter buried like turnips. As I have noted, I believe these radishes are fine boiled like turnips.

About the middle of the month I plant sets of the early Pearl or the Norfolk Queen onion, to make green onions early

in spring. These are planted in open furrows like the cabbage plants at the same time I plant sets of the Yellow Potato onion to make ripe onions in June. These are more hardy and are planted in shallow furrows and earth pulled to them later, to be pulled away in the spring. This onion never makes seed and is a poor winter keeper in the house, and is far better set in the fall. I have wintered them well in a locality colder than Philadelphia.

Farther north the Egyptian, of similar character but even greater hardiness, is used for green onions. It does not make much of a bulb, and is more like a leek.

In September we pull the soil more to the rows of leeks to make as long white shanks as possible. We let them remain in the rows all winter, for our soil here is open more than it is frozen in winter and we can get them up easily, just as we do the parsnips, salsify and carrots. But in a colder climate these can be taken up and trencled somewhat after the manner of trenching celery, and covered with straw so that they can be gotten at when the soil is frozen hard.

To get the earliest cauliflowers sow the seed early in September, and getting good plants, set six to each sash in a heavily enriched cold frame. Then you can fill in the space with a close-heading lettuce like the Tennis Ball, to head about New Year. After that keep the cauliflowers well aired in all sunny weather and by the middle or last of March they will be getting up to the glass and can be hardened off and the sashes removed to other frames for setting the tomato plants for hardening these, too, and the cauliflower will head before the weather gets hot and will make very fine heads. They, too, are much helped in spring by applications of nitrate of soda. I once used 1000 sashes for this crop and hardly failed to make a good head on any of the plants.

I always plant a surplus of lima beans for green use, for I want a lot of ripe ones for winter, and these are now being gathered.

Early in the month, if not sown in August, sow seed of Big Boston lettuce for setting in the frames for a Christmas crop. This frame crop can be made anywhere in our circulation region, while the later heading in winter in cold frames can only be done in the milder sections. But anywhere the plants can be wintered in frames and head early in spring. For this crop the seed should be sown in a frame the last of the month as a succession to the fall crop.

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HORTICULTURAL

Edited by C. A. McCUE

Wormy Apples

During the past two seasons there has appeared a very serious trouble upon late fall and winter varieties of apples. The source of injury is a small worm that enters the side of the apple in late summer. The place of entry is small and the amount eaten by the insect amounts to almost nothing, yet it leaves a blemish upon the apple that will throw it out of the fancy grades. Very often the worm only enters to a depth less than a sixteenth of an inch, yet the blemish from a salesman's standpoint is as great as though it had eaten its way to the core. Just what the insect is has not been definitely determined. A well known entomologist in New York has stated that it is a "delayed" brood of codling moths. Yet the work of the insect differs quite materially from that of the codling moth. The second brood of codling moths usually enter the fruit on the shady side, or where two apples touch each other, or where a leaf shades the apple. The trouble caused by the insect under discussion is usually upon the cheek of the apple where it is exposed to full sunlight. A thorough study of the insect causing this blemish is needed, as last year its ravages undoubtedly cost the apple growers of the Eastern United States thousands of dollars. The apple is rarely rendered unsalable, but its grade is lowered and the price received is correspondingly less. The writer was in a large apple orchard only a few days ago, that had been sprayed five times with arsenate of lead in the spray and the spray could easily be detected upon the fruit, yet many apples had small worm holes in the side exposed to the sun, and fresh holes showed that the insect was rapidly causing new infections. The trouble was visible late in July and seems to increase up to picking time. Winesap appeared to be the most subject to attacks. Another peculiar fact appeared in that certain sections of the orchard were attacked worse than others. An effort is being made to breed the moths from wormy apples in order to determine if the trouble is really caused by the codling moth or by some nearly related insect.

Peach Yellows

This time of year is a good time for the careful peach grower to go carefully and systematically through his orchards in search of yellows. The peculiar "willow twig" and "willow leaf" so characteristic of peach trees affected with yellows make their appearance during July, August and September. Again, the premature ripening of peaches upon a tree or upon a limb of a tree is always an object of suspicion. There are unfortunately other troubles affecting the peach that may cause reactions in growth that resemble yellows. There is no doubt in my mind that many of the peach trees and peach orchards that have been said to have died from yellows, never had the yellows at all. Trees severely attacked by the peach tree borer often develop symptoms that resemble yellows. I believe that fully 75 per cent. of the cases of yellows (so-called) have been due to either borers or nitrogen starvation. Lack of cultivation, lack of plant food and lack of soil moisture may cause symptoms in the growth resembling yellows. The more I see of so-called yellows cases, the more doubtful I become of my ability to diagnose yellows. I have seen trees that

appeared to have yellows, yet the following season they were perfectly healthy. We all know that a true case of yellows is incurable, so it is best to give the yellows side of it the benefit of the doubt and quickly remove every tree that we suspect of having yellows. My men have a standing order to stop all other work when they discover a suspicious case, get an ax and remove the tree. It is not enough to remove the top of the tree by cutting off the branches, but the trunk and main roots should be removed at once. The disease is highly contagious and all portions of the diseased tree should be hauled out of the orchard at once. In removing diseased trees from the orchard the limbs should be lopped off and carried out in such a way that the diseased limbs do not touch healthy trees. There are cases on record where men have simply dug out a yellow tree and then hitched a team to the trunk and dragged it out by going down a row, the result being that yellows developed where the diseased limbs had brushed the healthy trees.

The cause of yellows is unknown. Many theories have been advanced, but none have been proved. All we know is that the disease is highly contagious and incurable.

Queries Answered

Black Knot on Plum Trees.—D. J. G., New York, writes: "There are several plum trees in my garden more or less infested with black knot. Is there any treatment that will cure? Should they be cut down and burned, or let them stand and bear what they will?"

The black-knot on the plum is a rather serious plum trouble and the only sure treatment for it is to cut out the infected limbs. It is not very often that this method of handling the disease is satisfactory, unless it is started when the disease first appears, and then the diseased branches kept cut out each year. When a tree becomes badly infested, it is almost impossible to cut it out without damaging the entire tree. Spraying with Bordeaux mixture in the spring when the knots become velvety is an aid in preventing the further distribution of the trouble. If your trees are now bearing a good crop of plums, I would suggest that you leave them until the crop is harvested, as the period of infection is past and there would be no further trouble in the immediate future of trees in this vicinity.

Blight on Quince Trees.—H. S. B., Pennsylvania, writes: "We have a small orchard of quince trees and the blight is getting into it. Last year there was a little on some trees and this year there is more. I cut the blighted parts off and expect to burn them, and we sprayed the trees the third time, I think. What else shall we do. Blight is still coming on and I don't know what else to do for best results. There are lots of quinces on this year."

It is a very difficult matter to keep blight out of quince trees, especially in this climate. The past two seasons have been very favorable for the spread of blight. Whether or not cutting will hold the disease in check will depend a great deal on how the cutting is done. Usually the disease is back much farther in the tissues than is indicated by an external appearance and if not cut beyond the blighted twigs, the disease will keep spreading down the branch. Usually it is necessary to cut about 10 to 12 inches below where any signs of blight occur. All tools should be thoroughly disinfected with some good disinfectant, such as bichloride of mercury or formalin. As soon as the cut is made the knife, shears or saw should be carefully wiped off with the disinfectant and some disinfectant should also be applied to the freshly cut surface. Unless this is done the disease may spread by the pruning tools. It is good practice to burn all the prunings, not because the disease is spread through the air by the wind, but that more or less fermentative sap containing blight organisms will be oozing out of the cut branches and will attract various insects which will carry the disease to the other trees.

Spraying with Bordeaux mixture immediately after cutting out blight should be of some value, though this practice is largely in the experimental stage as yet. Unless the blight is very bad it is better to defer cutting until midwinter, when the blighted branches will be easily detected and can be cut out. At that time it is also easy to find the canker and blight organisms which carry the trouble over until the next season. Almost invariably when the disease has been checked or line of demarcation between the healthy and diseased bark. When this crack runs all the way around the branch there is probably nothing more to fear from that particular canker, but in many cases the line will not run all the way around; the diseased tissue gradually merges into the healthy tissue and this indicates that the blight is still in the tissue and the cut must be made somewhere below where the sign of trouble occurs.

C. A. McC.

Waited Four Years to Make Sure

R. J. HOLLIDAY.

I tried the experiment of planting three acres of trees in blasted holes in the spring of 1912 and made up my mind that I would publish the results after waiting long enough to be sure of my facts. It has now been four years and I am ready to express my opinion for the benefit of other fruit growers. There is a very decided difference in the growth of the trees upon which the dynamite was used and those, the holes for which were dug by hand as checks. The soil in our orchard was a clay with an underlying shale hardpan which was next to impossible to break up with a bar. The dynamite broke up this hardpan over a radius of about 10 feet, with the result that our trees immediately threw out roots and gained growth in one month that our other trees could not attain in three.

The cost of planting trees in blasted holes in our soil amounted to about half the cost of planting by ordinary methods. I am told that this difference would not be nearly so great in more favorable soils. However, I have no doubt many others are planting trees in hard soils similar to ours, and, therefore, feel that this information may be of value to them.

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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

The Use of Green Manure in the Eastern States

"I would rather have a good Crimson clover sod than 15 to 20 loads of stable manure per acre. My land, before the use of Crimson clover, would not grow more than 10 to 15 bushels of corn per acre; now I can get 90 to 100 bushels per acre and my land gets better every year. I get two crops a year—Crimson clover hay and corn or tomatoes—on the same land."

This statement was made by a practical Delaware farmer not long ago when discussing the merits of Crimson clover for green manure. This opinion is shared by hundreds of farmers in South Jersey, Delaware, Maryland and Virginia. It is doubtful whether there is another section in the United States where green manuring is carried on more satisfactorily than in Delaware and South Jersey. The climatic and soil conditions combine in such a way as to favor the production and use of green manuring crops for the most profitable returns. The highly satisfactory results secured by the system of green manuring are directly due to the nature of the crop used for this purpose. The life history of Crimson clover is unique among clovers. No other grows so rapidly nor matures in such a short time. Crimson clover occupies the land about nine and one-half months from seeding to blossoming, while Red clover occupies the land 15 months from time of seeding until the first cutting is removed. In fact, Crimson clover is ready to turn under May 1st. At that time it has gathered the greater part of the nitrogen it would contain at maturity, and has occupied the land only nine months. In the opinion of farmers, as much nitrogen can be gathered by the Crimson clover in nine months as will result from the growth of Red clover in 15 months. Careful experimental tests have shown that Crimson clover will gather more nitrogen during the fall growth, from August to November, than will Red clover.

If you should tell the ordinary farmer that he could supply his soil with 100 pounds of nitrogen per acre at a cost of \$2 to \$3 per acre he would take you to be a fit subject for the insane asylum. Even to those who are familiar with the plant food value of commercial fertilizers and stable manure it may seem an exaggeration to state that with an outlay of \$2 to \$3 per acre for labor and seed a green manure crop may be produced that is worth \$12 to \$15 per acre. Yet this is a fact, as has been demonstrated time and again by farmers in Delaware. Men have taken poor sedge grass, sassafras and scrub pine land and through the use of green manure have brought up the soil to a state of fertility that will produce paying crops. The value and efficiency of this method of soil renovation lies in the fact that the green manure is produced between other crops of the rotation.

In order to use Crimson clover most effectively it must be sown in the latter part of the summer. If seeded in the spring it soon comes into blossom with a very short growth.

The Delaware farmer seeds down his corn to Crimson clover at the last cultivation, which is generally from the middle to the latter part of July. The clover comes up promptly and by the time the corn is cut has formed a heavy

green carpet over the ground. This coat of living green keeps the soil from washing or blowing during the winter. On soils of a light, sandy nature this tendency to shift or be blown by the winter winds is quite marked, but a growth of Crimson clover prevents this quite effectively. Furthermore, vegetable matter is exactly what these sandy loam soils require, as by it they are made more compact and hold moisture better.

To illustrate how effectively Crimson clover blends into a rotation system for soil improvement it is only necessary to compare it with the old-fashioned rotation of corn, oats, wheat, clover and timothy. In this 5-year rotation there is but one legume grown, and under most conditions there is very little clover left in the timothy sod when it is turned for corn. Even though the sod is turned at the end of the fourth year, it takes a much longer time to get a growth of Red clover than of Crimson clover. The Red clover is sown in wheat in March. The wheat is removed in July and the Red clover occupies the land exclusively from July until the next June. If the clover is retained for corn it will be the next April—two years from date of seeding before the clover is turned for corn. If timothy is grown in combination with the clover and the land kept in grass two years, it will be three years from the time the Red clover is seeded until the sod is plowed under. On land of only medium fertility it is likely that much of the nitrogen gathered by the Red clover has been absorbed by the timothy during the last year. This may account for the rather poor results that often attend the growing of Red clover for soil improvement in a long rotation. In the case of Crimson clover the seed is sown in corn the latter part of July and the corn removed in October. The clover occupies the land until next April or May, when it is plowed under for green manure and the ground planted to a spring crop. Or, if the soil is in good condition the clover is cut for hay. In either case the Crimson clover is followed by field corn or sweet corn, tomatoes, late potatoes or cowpeas or soy beans, for the second year of the rotation. The land is seeded to wheat for the third year and is followed by Red clover for the fourth year. Where cowpeas or soy beans are used as one of the crops following Crimson clover, the 4-year rotation will stand as follows:

1st year, corn, followed by Crimson clover. 2nd year, one-half of field of clover turned under for sweet corn and tomatoes, and the other half cut for hay to be followed by cowpeas for hay. 3rd year, wheat. 4th year, Red clover.

It is possible in this rotation to grow three legume crops in four years as compared with one legume in the 5-year rotation mentioned above. The growing of Crimson clover does not intrude upon the place of Red clover in the rotation. The one supplements the other. By the use of such a rotation the nitrogen supply of the soil is greatly increased in a short time. Where the land is so light that wheat or grass can not be profitably grown, or where truck crops are produced chiefly, the Crimson clover will be found to work in well. For instance, in Delaware the growers sow Crimson clover in their standing tomatoes as well as in corn. Where early



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potatoes and cantaloupes have been removed the land is disked and seeded to clover. Often wheat stubble is plowed down and the land fitted and seeded to Crimson clover, which prepares for a cultivated crop the next spring. It is not unusual to find a mixture of Crimson clover and buckwheat seeded after wheat. The buckwheat is cut in the latter part of September and the clover continues through the winter. This combination has been found to work well, since the buckwheat does not shade the ground so much as to injure the clover.

Some have questioned the practicality of growing green manure for soil improvement on the ground that such practice must result in the loss of a crop. In other words, the rent of the land plus the loss of the use of the land for a cash crop is too expensive for the results obtained. Such is not the case where Crimson clover is used as the green manure crop. Crimson clover has been grown in Delaware for more than thirty years, and the growers do not let it interfere with the regular crops of the rotation. Even where the clover itself is harvested for hay or seed it is removed early enough to follow with another crop the same season.

A close study of the Crimson clover crop made at the Delaware Station a few years ago shows that a good stand, top and roots, contains about \$20 worth of plant food. This is what the chemical analyses showed. Four-fifths of this value was accredited to the nitrogen. A great feature of the crop was established by these studies, namely, that a large proportion of the total nitrogen content of the plant at maturity was gathered in the fall. The entire plant, under favorable conditions, will gather 70 to 90 pounds of nitrogen per acre in the fall growth. A fair growth of Crimson clover, including tops and roots, will contain 120 pounds of nitrogen per acre—an amount that would require over 700 pounds of nitrate of soda to furnish. The plant also takes up considerable quantities of phosphoric acid and potash in its course of growth. This crop of Crimson clover contains sufficient nitrogen, phosphoric acid and potash to produce a 60-bushel crop of corn and have remaining enough nitrogen for a 25-bushel crop of wheat. Of course, it must be remembered that all the nitrogen contained in the clover is not available at once, but gradually supplies the crops as they require it.

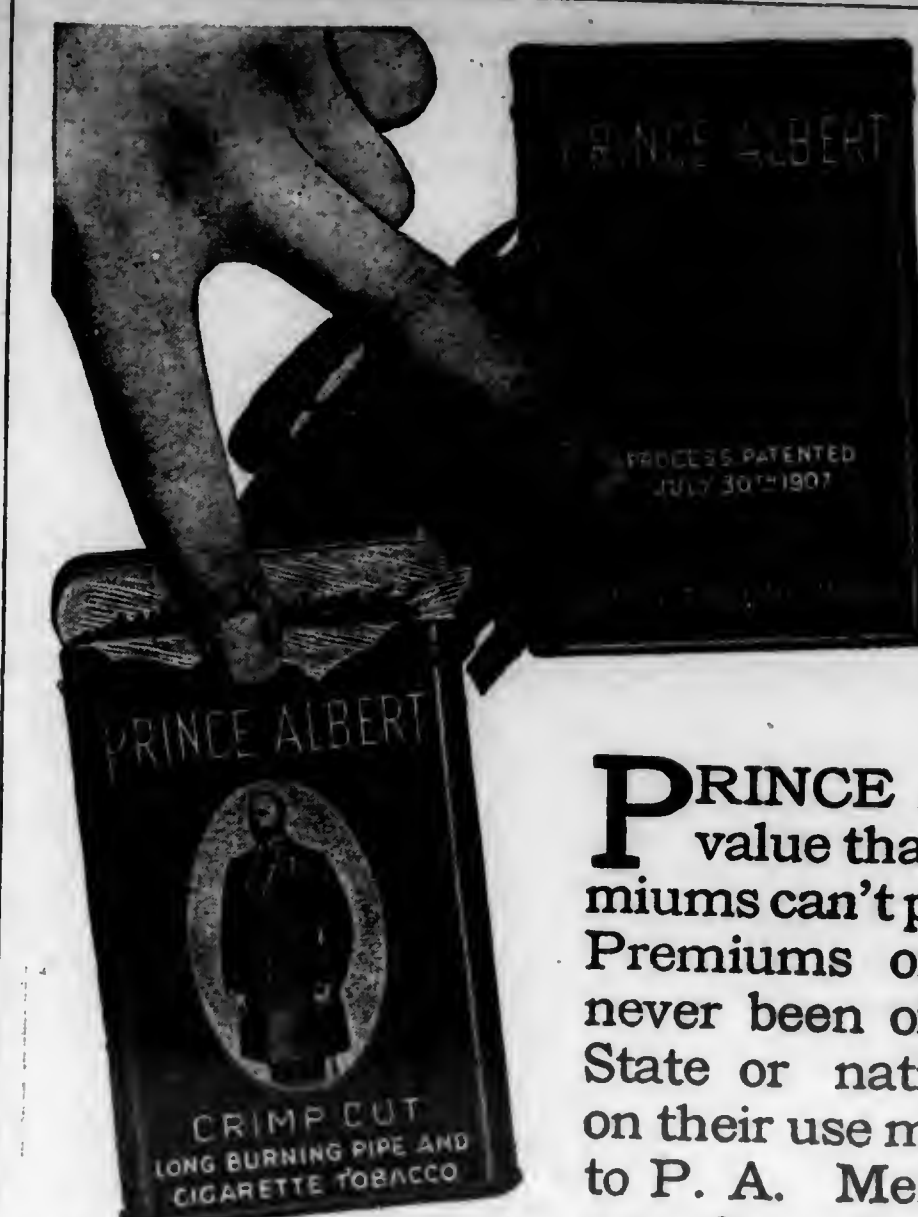
The cost of growing a green manure crop of this value seems absurdly small. The usual custom is to sow 1 peck, or 15 pounds, of clover seed per acre. The cost of seed per acre will vary from \$1.50 to \$2 per acre. In some seasons the price of seed is a little higher. The labor of seeding is very small, since it accompanies the last cultivation of the corn. Ordinarily the extra labor would not exceed 25 cents per acre. Thus for \$2 or \$3 per acre a green manure crop can be sandwiched between the regular crops of the rotation that will greatly increase the nitrogen content of the soil and supply it with the much needed organic matter.

Fertilizers for Wheat

What kind of fertilizers to use for wheat is a question that is before many farmers at this season. As is well known it is impossible to secure potash except at prohibitive prices, consequently that element of plant food in a commercial form necessarily must be omitted. The question is whether to use nitrogen and phosphoric acid, and how much. The soil requirements of different farms differ so much that a standard formula cannot be applied in every case with the same results. This point, however, is

quite clear to farmers in the Eastern States, viz., that practically all of our soils are deficient in phosphoric acid, and as the wheat crop draws quite heavily upon this element of plant food it is a profitable practice to use a moderate quantity of some carrier of phosphoric acid. Acid phosphate is the more common carrier of phosphoric acid, and perhaps at present the cheapest and most profitable form to use. There are few lands prepared for wheat that will not be benefited by the use of phosphoric acid. As for the use of nitrogen much will depend on the previous treatment of the soil. Where stable manure has been applied regularly in the rotation, particularly on corn which immediately precedes the wheat, it should not be necessary to use nitrogen in any form. The manure which was applied to the corn land early in the spring and turned under has now become well decomposed and in an available form for ready use of the wheat plant. Particularly is this the case if the ground is plowed again after the corn is removed in the fall. Nitrogen at this time is higher than usual and the farmer should use the home sources of manure as far as possible. Wheat is greatly benefited by top dressing with a moderate quantity of stable manure in the late fall or winter. The manure offers some protection to the wheat and is an excellent means of securing a better catch of red clover the following spring. Where wheat follows wheat or oats and the soil is rather thin in the absence of manure for top dressing it will often pay to use a fertilizer containing 2 or 3 per cent. of nitrogen. On the other hand, where wheat follows cowpeas or soy beans as a green manure crop, acid phosphate alone will give excellent results. The stimulating effect of the nitrogen in the fertilizer is of benefit in very late seeding, as it will enable the wheat to catch up with earlier seedings. Very often earlier seeding (not too early) will give the wheat the same start as if it were fertilized with nitrogen. It is not so well known or observed that phosphoric acid has a wonderful effect on encouraging the wheat plant to tiller. In fact, tests at the Delaware Station have shown that phosphoric acid alone will give as great results in increasing the tillering of wheat as nitrogen alone. Of course, the two combined give somewhat better development than either singly in some cases. The early preparation of the seedbed for wheat, together with moderately early sowing, will often enable the wheat plant to yield as well as where nitrogen is used on land hurriedly prepared or seeded late. These are points to be considered by the wheat grower if he expects to make the best use of his soil and reduce the cost of his fertilizers for wheat. Where wheat follows potatoes, tomatoes or other heavily fertilized cultivated crops it is generally inadvisable to use any fertilizer on the wheat except occasional 1200 pounds of acid phosphate per acre in special cases to stiffen the straw.

The quantity of fertilizers to use per acre will, of course, depend on the condition of the land. On most soils 300 to 400 pounds of acid phosphate can be used with profit. Where both nitrogen and phosphoric acid are applied, 350 to 450 pounds per acre will pay. In many cases where the land has been kept in a good state of fertility by stable manure and sods in rotation, 200 pounds of acid phosphate will greatly increase the yield. Finally, it should be remembered that phosphoric acid is the limiting element in wheat production in most cases, and that nitrogen can be applied only in those cases where the needs of the land demand it.



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POULTRY

Edited by F. V. L. TURNER
All letters, inquiries and requests in reference to poultry, should be addressed to the Poultry Editor of The Practical Farmer, Philadelphia, Pa.

Practical Poultry Talks

Now or Never for Fall Layers

September is the very last month in which to finish off what are going to be layers next fall and winter.

A great deal of the poultry advise furnished those who need assistance should bear heavily upon this subject of fall layers; it is the most vital of all the subjects relating to success or profit in keeping poultry.

Take, as a highly probable condition in 90 per cent. of all poultry raised for replacement of flocks, the early and late hatches that are so commonly brought off; the first hatched are fully matured by October 1st, the late hatched are not and may not be ready until mid-winter. In both cases the raisers are in error. As has been pointed out in the last two or three issues of this paper, various means must be employed to hold back the too forward pullets that a molt will not take place after a short lay; in the case of those hatched late, 30 to 45 days (from Sept. 1st to Oct. 1st or 15th) will help wonderfully in further development that an early lay may be had.

If it is at all possible to separate the youngest and give them a little more attention, eggs will be procured very much earlier. To help out on their quicker development the following ration will be found of great value:

Bran	10 lbs.
Corn meal	4 lbs.
Middlings	6 lbs.
Old process oil meal	1 lb.
Beef scrap	2 lbs.
Bone meal	1 lb.

Mix thoroughly and feed in a crumbly mash early in the morning and again at night, all they will eat up clean in 20 minutes each feeding. Mix this mash with sour or skim milk, if available, instead of water.

For the whole grain ration feed 5 lbs. wheat, 2 lbs. cracked corn, and 2 lbs. of oats (pulled), in the middle of the day, a pint to 20 light breed pullets or 15 heavy breed pullets. Grit, oyster shell and charcoal will be constantly before these prospective layers. Green food should not be fed oftener than three times a week.

About October 10th provide a hopper, conveniently located, filled with a good laying ration, gradually diminishing the crumbly mash prescribed above, but do not begin to diminish until the pullets begin eating from the hoppers. Grain ration from October 15th should be that decided upon for fall and winter laying, a good one consisting of cracked corn, 10 lbs.; wheat, 10 lbs.; oats, 5 lbs.; Kaffir corn, 2 lbs.; barley, 2 lbs.; buckwheat, 2 lbs. After the birds have been changed from crumbly to dry mash there will be, or should be, very few that are not laying by Nov. 1st. Some should lay earlier than that date, but the bulk of the flock should be forced or helped to maturity in time for a part, at least, of the fall profit.

If it is found that no amount of care and feeding will produce a change in the general appearance and condition of the flock it is proof conclusive that the early environment of the young pullets was not such that maturity will be reached much sooner than midwinter or later, therefore, the effort will avail little and is not worth while. It is best

to market these youngsters after not more than three weeks of attempted development.

Chicken pox, sorehead as it is called farther south, will cause some little trouble about this time and a little later. To ward off this disagreeable and frequently fatal disease the use of sulphur in small quantities is recommended.

Once a week a tablespoon full of sulphur to every 20 birds over 4 months of age will greatly assist in preventing the trouble. A diluted lime solution, a tablespoonful of saturated lime solution to two quarts of drinking water, will prevent its spread and help the birds in every way.

What We Are Asked

Roup.—C. C. W., Pennsylvania, writes: "There appears to be no positive cure for roup; at least I have not found one. In my mind the offer of Mr. T. C. Quisenberry, Director Missouri Poultry Experiment Station, of a large sum for a cure, it occurs to me that the difficulty can be overcome by preventive measures rather than through remedial agents. Cannot we read the who raise chickens have a full explanation of this highly fatal disease with such recommendations in preventive measures as will stop, at least to some extent, the yearly loss exacted because of what must be lack of preventive knowledge?"

Without a doubt there is no subject in poultry culture, the health side of it, that is entitled to more consideration by both federal and state research bureaus and by the poultry medical profession generally. As a fact, roup is of two forms (no matter whether caused by the same germ or not) one contagious catarrhal form, local to the eyes and nasal passages, and the other a diphtheritic form, wherein false membranes form in the nasal passages, the eyes, mouth (more frequently), the pharynx and larynx and extend to the trachea, bronchi, air sacs and possibly the intestines and other abdominal organs.

In the first case, contagious catarrh, the eye is principally affected. Since the hen's eyeball floats, so to speak, in a very spacious nasal cavity, and since the mucous membrane of the eye is directly connected with the nasal machinery, the eye cavity is the natural repository of catarrhal conditions, inflammation of the mucous surfaces; this inflammation later becomes erosions, ulcers. When the secretions, due to the catarrhal condition, become abundant, they form thick, yellow, cheesy masses, pushing out the eyeball, choking the nasal passages, obstructing breathing and swallowing and, finally, death follows. This disease spreads rapidly and resists treatment according to its degree of virulence and is not susceptible to the action of ordinary remedial agents employed for simple catarrh, from which it differs widely.

Simple catarrh is caused by drafts; contagious catarrh is caused by a parasite, as are all contagious diseases, therefore, the disease is contracted by introduction only. One bird, the secondary stage of contagious catarrh, can distribute enough germs in a half dozen shakings of its head (and these shakings are almost continuous in advanced stages) to distribute the malady to a whole flock.

If all cases of catarrh are isolated at once, the quarters from which the affected birds were removed are sprayed with germicides (floors, nests, droppings-boards, roosts, and especially drinking and feeding vessels) the danger of an epidemic is directly proportioned to the thoroughness of the sanitation practiced. Remedial agents for the affected birds consist in the earliest stages of sulphate of copper, 3 per cent. solution, to be used with great care, injected into the nostril, eye, cleft and roof of the mouth. Where purulent masses form there is no agent that is positive in its action in a majority of cases. Boric acid, 15 grains to an ounce of water, or a 2 per cent. solution of creolin or carbolic acid can be used as an injection, as can a mixture of peroxide of hydrogen

and water, equal parts. Stimulating foods, easily digested, should be the diet. With diphtheritic roup, diphtheria, the parts affected are as described above. In such cases the affected parts (particularly the mouth) have the same appearance as is encountered in human beings.

Avian diphtheria affects fowls, turkeys, pigeons, ducks, pheasants, etc. As in catarrh, watery secretions from the eyes and nostrils appear, a greater weakness than comes with simple catarrh, arched back, head and neck drawn closely to the body, roughened feathers, rapid audible breathing, difficult swallowing and affected vision. Following these symptoms come those of yellowish or greenish evacuations, a thick, stringy mucus from the mouth and dilated eyes, partly covered with a thick fluid. Later the patches in the mouth turn gray and then swallowing becomes difficult. Later the patches turn brown, and can be removed without the loss of blood. Altogether, the disease is highly contagious.

As preventive measures a thorough interior spraying of carbolic solution, 5 per cent., or some equally efficient germicide should be made upon discovering the first indications, and should be repeated every other day for ten days.

The affected birds require a warm, dry, clean, well-ventilated room.

Tincture of iodine applied to the false membranes is quite effective, an boric acid solution, 15 grains to the ounce of water, can be used in the nostrils and on the patches in the mouth turn gray and then swallowing becomes difficult. Later the patches turn brown, and can be removed without the loss of blood. Altogether, the disease is highly contagious.

At least 35 days should be the convalescent hospital period for all birds showing signs of this disease.

Leg Weakness.—K. E. H., Florida, writes: "I am having trouble with my young chickens. They seem to be weak in the knees—when they eat they fall over and are not able to run any distance without falling. They are hungry and seem to be perfectly well in other respects, but their combs and around their eyes have begun to turn white. Please tell me what the trouble is and how I may remedy it."

Weak knees or leg weakness is the result of any one of a number of causes; the whitish appearance of the comb and face sounds like a description of asthenia (going light) and, coupled with ravenous appetites, is probably that disease. Dry quarters and corn feeding, with plenty of sunlight on dry range will usually care for the leg weakness; asthenia is a bacterial disturbance and is hard to combat. The germ of this disease has no remedial agent, but succumbs, in its early stages, to the same treatment as is prescribed for another intestinal disease, bacterial enteritis.

For young pullets, 2 to 4 months of age, give a pill made of benzonaphthol 1/4 grain, subnitrate of bismuth 1/4 grain. Dose's powder 1/4 grain each will one pill in the A. M. and one in the P. M. Feed light foods and as much sour milk as they will drink. Do not, in this case, give sweet milk. Older fowls suffering with this malady should receive double the dose given above.

Broody hens have no place in the poultry yard at this time of the year; the quicker a hen is broken up from broodiness at any time the quicker she resumes laying.

Our neighbor usually suggests that we pen up our chicks—the same suggestion about the cat might not suit the neighbor.

Electricity on the Farm

(Concluded from page 323)

The shortening days are already making us think of the long winter evenings when electrically lighted farm buildings would decrease the drudgery and add to the comforts of farm life. To get the most out of the plant this season it will be well to start planning early. September is none too early to begin to get together the necessary figures and data.

In an article to follow this one, the first cost and maintenance charges on some typical plants will be discussed. Meanwhile, think over Mr. and Mrs. Conley's equipment. Remember that electricity means light—light houses, lighter work, light hearts—and the greatest of these is the last.

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OUR EXPERIENCE POOL

All our readers are invited to contribute their experiences on the topics under discussion. \$2.00 will be paid for the best, and \$1.00 for the next best contribution, and 50c for each other article published. Contributions must be in our hands 15 days before date of issue.

TORIC No. 1203, Sept. 15.—Nearly every farmer has some "hobby" or "side line" in which he finds profit and pleasure, or which he expects to make profitable—perhaps it is growing mushrooms or raising some medicinal herb, such as ginseng, or perhaps it is keeping bees, or breeding animals for pets. What unusual thing of this kind are you doing? Tell us about it and whether you find it profitable. Describe the methods you use. Limit, 250 words.

TORIC No. 1204, Oct. 1.—How shall we light the farm home? Our farm homes need better illumination for the long fall and winter evenings than the little lamps of the past; many of our readers have taken up this problem and solved it in their own homes. We want the experience of such for the benefit of farmers who are now considering improved lighting. Tell us your experience with electricity, acetylene gas, gasoline or improved oil lighting systems, with cost data and results obtained. Limit 200 words.

Topic No. 1202.—The Rural Schools. Does the rural school in your community educate your children as you want them educated? Does it teach the rudiments of agriculture? What suggestion can you offer for the betterment of rural schools, based on improvements made in your own, or that you have heard of in other districts?

E. C. W., Mecklenburg, N. Y.—A school that is located in the open country with pure air and the wonderfulness of Mother Nature on all sides, is the place for the children of the farm to begin their education. The environment is the best, if the people of the district will become interested and work together to make the school building and its teacher what they should be.

I have in mind a district that has a school worthy of its name. Some three years ago the improvements began. First, a new roof and chimney, then a good coat of paint inside and out, new desks and hard-wood floors. The windows and blackboard had previously been attended to. A teacher of experience was hired at \$12.00 per week. The results she could obtain were gratifying.

Two entertainments given by the children at the school house helped to further community fellowship, and the proceeds bought new towels and wash dish, a water pan and a drinking cup for each pupil. Yes, and some pictures, and window curtains.

The subjects required by the syllabus were very well taught and the teacher made a great deal of agriculture. Each pupil had a monthly study lesson from the State College. Bulletins and agricultural books were in the well-stocked library, but better than all this were the field trips that were taken each week, when possible, to study the trees, birds, flowers, grasses or grains.

During winter. The boys built bird houses, tested grain for germination, had potato and corn contests and studied plants. There would be a great many more rural schools like this one if the people would work to better the conditions instead of finding fault and doing nothing. What a blessing it would be to the generation that is just starting with their education.

G. F. S., Georgetown, Del.—Our rural school gives little or no agricultural instruction, but I hope the time will come when the principles of agriculture, household economics and manual training may share equally with the usual subjects taught. Here is an outline plan, based on what I have heard is used elsewhere: Especially for boys—a plot of ground, or "farm," for each child over ten years old; crops of that locality grown by latest scientific methods, as far as possible. For girls—practical home economics. In winter, farm architecture and carpentry, general repair work, etc. Every day, or alternate day, theoretical instruction in one or more of above; every week, one or more afternoons, or half days, demonstrations or practical work. The regular teacher might be qualified for all or part, or a demonstrator regularly visit one or two schools daily, in weekly circuits. "Farm" work should continue through vacation. A "home" might be equipped for, and utilized by, more than one district for domestic science; a "shop" the same. Let the district school be a primary agricultural college.

E. B., Greenville, Pa.—The question, "Are our rural schools satisfactory?" is a very important one. It depends mostly on the teachers, and a good deal on the school director. It is an old saying, "Teachers are born, not made." Some teachers are miserable failures even after years of experience. Perhaps the reason is they do not study best methods of teaching. Country pupils should be taught things pertaining to rural life largely. One of our successful rural teachers bought a Babcock tester with money gotten from a school social, and parents of the children were invited to send samples of milk there to be tested. Another teacher was teaching "reflex action." Then one bright little fellow came home and said he knew why a chicken flaps around after its head is cut off—"reflex action."

School directors do wrong when they fail to supply their teachers with the necessary equipment for good school work.

One little fellow told me he knew why some corn was dark green and other corn was a sickly yellow. The dark green corn grew in soil where there was plenty of nitrogen.

Some teachers fail in their work because they are teaching merely to get money to help them through college, while they put all of their extra time in studying college textbooks. One teacher used to let the large scholars hear the classes while he "worked up for college exams." However, I notice an improvement in rural school work over that done even two years ago.

Mrs. E. A. B., Delevan, N. Y.—It seems to me that the rural school in our community does educate the children as we would want them educated. It does teach the rudiments of agriculture in an interesting, pleasing way, so that children are enthusiastic and eager over the things taught at school. Seeds are tested, the habits of birds studied, the making and planting of flower beds, etc.; monthly calendars, with each day marked fair, cloudy or sunshiny, are made by the children, with an appropriate drawing of flowers or fruit at the top. English as it is taught in fables and fairy tales to the little ones, the poems and good literature of all kinds, so much better and different than when I was young, all appeal to me. I will have to confess instead of learning of these things from my children it is grandchildren who tell me, because I am always interested. Children learn

so many things younger than they used to—like writing, punctuation, use of capitals, etc.; things are taught from the first that grandma can't in old age remember, because they were not so thoroughly taught in her youth as now.

M. T. M., Mitchell, Va.—Until two years ago we had a very good graded school in our village, but as our school is in the center of the district the school board decided to erect a central high school and use wagons to convey children from a distance. About \$500 was raised by public subscriptions and the county furnished the rest of the money. Now we have a very handsome school building, with many conveniences, our teachers are fairly good, but they rarely ever stay longer than one season. Our county demonstrator visits the school occasionally, hence many boys belong to the corn club and they are doing good work on their farms; a few girls belong to the canning club. The school children have organized a junior league. A civic league has been in existence about two years, though few members take the time to attend the meetings; nevertheless we have given several good plays and a few oyster suppers, so we bought a second-hand piano for the school for \$75. Then the State Department of Education sent us a very fine library, valued at \$40, after we made \$15 for this purpose. For girls we send many magazines also, so we have a nice little library and about \$15 in the treasury. Yet with these many advantages our school children are not as well educated as the ones were years ago, when they attended school in a one-room school house. Few children are well versed in the three "R's" and

many ready to leave school can't solve very simple problems in arithmetic; and they do not study grammar, "because they do not think it is necessary." We need good, stern, settled teachers and I approve of the system now so much in vogue in many states—country children should be taught agriculture, domestic science and botany.

Mrs. J. R., Wirt, Ind.—No, the rural school is not educating our children properly. How can a young, untrained girl teach all eight grades and do them justice? Just about 15 minutes to a recitation—what can be done in that time to impress a child's mind with several in a class? My children study all their lessons at home. About all the teacher does is to hear them recite. It is too hard on little children to do so much school work at home. Their time at home should be given to relaxation. The only solution I can offer is the consolidated school. My children formerly attended such a school housed in a fine, up-to-date building. There were three teachers to do what one teacher is supposed to do in our little country school. Our course of study includes agriculture and domestic science. It is fine in theory, but too extensive for practice for one teacher with all eight grades.

Our county has several consolidated schools, of which we are proud. Instead of about five months of hurry and worry in a little one-room house, six months of dignified study in a suitable building with an unworked teacher and with suitable apparatus. I speak from several terms experience as a country school teacher, also as the mother of three school children.

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7962.—Ladies' apron. Cut in sizes 36 and 40 inches bust measure. The apron is cut in one piece and has a yoke facing.

The Women's Exchange

This is the farm women's own department—for them and by them. It is devoted to the discussion of topics of everyday interest to the women of the farm family. The Practical Farmer invites—and expects—you not only to write your experiences on the topics under discussion but also to propose topics for future discussions. The best letter published herein each issue will be awarded a prize of one dollar, and for each other letter published we will pay fifty cents. Address
WOMEN'S DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

SEPTEMBER 15.—The season for making pickles is at hand. We have had so many requests for an exchange on pickling, that the subject for this issue really selects itself. So tell us all about your favorite pickle—either sweet or sour—and how you make it. Besides the ingredients and how they are put together be sure to give us the little tricks or schemes of your own which have made your pickle famous among your friends. Give one pickle only.

October 1.—Heating the farm home. How do you heat your home? What in your experience is the best method, what have been your successes and failures in trying to accomplish better results in heating, what has it cost and what are your recommendations to those who are seeking good heat at a moderate cost and a minimum of labor. Limit your manuscript to 200 words.

All contributions to the Exchange must reach us at least 15 days before the date of issue in which the topic is to be discussed.

Give us your experience with drying or evaporating fruits and vegetables instead of canning. Which ones do you preserve this way, what is your method and how do the flavor and quality compare with canned goods?

Miss I. E. B., Franklinville, N. Y.—We dry apples, corn and pumpkin as follows: Apples we dry in the sun. We place two large boxes a distance apart out in the yard, with two long boards reaching from the top of one box to the other. On these we lay wrapping papers and when the apples are pared, cored and quartered, and each quarter sliced three times we spread them out on the papers until thoroughly dried. They are nice and white when dry. Other fruits can be dried the same way. Green corn we cut from the cob, cutting the top half of the kernels off with a sharp knife, then scraping the rest off the cob and mixing with the first cut, we spread it on enamelware pie plates and dry in the oven with door open, stirring it up at times.

Pumpkin we pare and cook until done, then dry on plates, same as corn. We like dried vegetables best; they are sweeter and richer than the canned, but we like canned fruit better than dried, still we are fond of apples dried as above. Here the demand for dried apples is greater than the supply. When one counts the cost of the jars, sugar, and the trouble one has packing, carrying to market, I think dried fruits, yes, and vegetables, are more profitable to sell, if one has a market for them.

Mrs. J. F. H., Warm Springs, Va.—Can if you can; dry if you can; if you can not dry, can.

The more you study the above, the more sense you will find therein. I would advise the purchase of both a drying and a canning outfit. Canning is a specialty with me, but I love the home dried fruit. Can, and dry, too, for neither will take the place of the other.

The dried sweet corn, when properly done, is far superior to the canned. Apples and peaches, dried, have a delicious flavor not found in the canned. Berries are good dried, and can be used to advantage in many ways. The smaller berries are especially adapted for use in puddings and cakes, and the dried or evaporated fruit can be used in a great many ways. Dried huckleberries are unsurpassed in puddings. Dried fruit must be protected from dust, moths and millers.

Heavy drilling, bleached or unbleached, makes nice sacks to keep dried fruit in when kept in quantities. Do not make the mistake of using the thin flour sacks. They are too thin and allow the insects to enter. It is impossible to decide which is more profitable to sell, as it all depends on the wishes and taste of the purchaser. It is quite easy to build up a trade in either. It must be clean and attractive in appearance, and you must always give full measure.

Mrs. J. H. B., Wirt, Ind.—I always dry as many apples as I can. My way is different from that of most women. I peel and quarter the apples and then slice as thin as possible. If put in a sunny place thin sliced apples will dry in two days and will be almost as white

as evaporated ones. They should be protected from flies with mosquito netting or thin canvas. If cooked properly they make delicious pies and apple sauce. I prefer them to canned apples and there is no expense attached. I have also dried peaches and they certainly are fine, just like preserves when cooked and slightly sweetened. I manage them as I do apples. Care should be taken that neither gets wet while drying, as they will be dark and not so well flavored. Then place in the oven and heat almost to the scorching point and worms will not bother.

I dry pumpkin as our grandmothers used to, i. e., cut it in rings and hang behind the kitchen stove on a clean rod or string. It can then be broken in pieces and stored with the other dried things and will make pies as good as the fresh pumpkin. I really prefer it to fresh pumpkin if it is soaked until it is plump and then cooked in the water in which it was soaked. All dried fruit should be soaked over night before cooking. Dried fruits should be more profitable to sell than canned, as there is no expense for jars, etc., and it can also be sent by parcel post so much handier and cheaper.

Mrs. V. H., Duffy, W. Va.—We dry small fruits, such as raspberries, blackberries and sweet cherries, as follows: Pick berries on a dry day, place on plates or small paper box lids and set in the warming closet of the range and on top of closet and they dry very quickly. Sweet cherries I dry about the stove and in the sun. First seed the cherries by hand, as they will remain whole and have a nicer appearance than when seeded with a seeder, and are as nice as canned cherries. I have just finished drying 25 pounds of berries, as we like them as well, or even better than, when canned. I have never sold any small fruits dried, but have found sale for dried apples, peaches and pears at a good price. I have also dried beans in the sun and think them very nice boiled in the pods with bacon in the winter. I have used a drier made of screen wire on range for drying fruits, which is very convenient and can be used while preparing meals, with a saving of fuel.

Mrs. R. M., Spotsylvania, Va.—Sulphured apples are very much nicer than dried or canned apples, and less trouble also; and when sold bring a better price than dried apples. For frying purposes I simply slice the apples without paring them, but those to be used for pies, etc., of course, have to be pared. Use a goods box any size you prefer, but I find a box about 3 feet square is very handy, and one can sulphur enough for family use in a box this size, in a very short time. Put two shelves in the box. They could be made of narrow strips, and do not let them touch, but if solid boards are used, holes should be put in the boards. Spread the apples on the shelves about 2 or 3 inches deep. Put a pan, plate or something of the kind, in the bottom of the box, and put some red-hot coals of fire in it and sprinkle a large spoonful of sulphur on the fire and close the door and let it remain closed about 1½ or 2 hours. Then the apples are ready to be put in stone jars, kegs, or anything of the kind, just so it is thoroughly clean and does not leak. Simply tie white paper or a thick white cloth over the jar and they will keep nicely. All you have to do before using them in winter is to wash them nicely, then fry, stew, bake or prepare them in the same way as fresh apples in summer. I have sulphured apples successfully the last twenty years and thoroughly enjoy them each winter and never think of drying apples at all.

After rubber heels begin to wear thin on the outside—as they soon do—but before they are worn quite through, take them to a shoemaker and have them reversed. They will last as long again and this costs little when done in connection with other work.—M. S. P., Penna.

Even Your Wear Can't Faze These Socks

If there's any work that makes a man's socks look "all-shot-to-pieces," it's farm work. You're on your feet most of the time, doing the jobs that are hard on shoes and even harder on socks. Don't put up with sore feet and quickly worn-out hose. Buysocks that are built strongest where the wear is hardest.

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The Practical Farmer Live Stock and Dairy Section

EDITED BY W. H. TOMHAVE

The Sow at Farrowing Time

Careful Feeding, Handling and Strict Attention to Details are Necessary to Attain Success

By HUGH FERGUS

The brood sow is the foundation of our future pork supply. Her importance is not appreciated until we stop to consider that all the future offspring produced must be under her care for about six months of the year. From the time of breeding to the time of farrowing there are 114 days, and from birth to weaning there are 42 to 60 days. The date a sow is due to farrow should be kept on record to avoid mistakes that may result in the loss of pigs.

During the time the sows are developing their young they should receive intelligent care and the right kind of feed. Plenty of good succulent pasture and a little grain in addition keeps them in fine shape. As the time for producing the young approaches, and pastures get short, more grain should be given to sows. Guard against giving sows feeds that overload them with fat, but instead give them feeds for the development of bone and muscle. If the sows were in good breeding condition at the time of service and have been carefully fed and managed, then strong, healthy litters will surely be the result at farrowing time.

Those sows that will farrow earliest in the season should be separated from the rest of the herd. About two or three weeks before a sow is due to farrow she should be placed in a pen so that she will become acquainted and contented in her new quarters. This pen should be a comfortable one where she will be undisturbed at the time she farrows. It should be dry and free from drafts. A guard rail is very necessary to keep the pigs from being crushed. Two by four planks set 8 inches from the wall and 8 inches from the floor will prevent the sow from lying on her pigs.

An active sow in comparatively light condition can be trusted with a liberal amount of bedding, but sows which are in high condition, or which are at all clumsy, had better be given only a moderate amount of bedding. However, never give the sow an overabundance of bedding; a small amount is all she will need. Cut straw or leaves are preferable. Plenty of fresh water should be kept before the sow at all times. The feed should be reduced somewhat toward the time of farrowing. If there is a tendency to constipation a slight change of feed may be necessary. Nothing but water should be given during the 24 hours previous to farrowing. If the sow has already farrowed a litter and has been properly fed and cared for during pregnancy, little difficulty may be expected.

With young sows, particularly those bred at an immature age, there is considerable risk at this time, not only to the pigs, but to the sow herself. Assistance should be at hand if needed, but the sow need not be helped if she is getting along nicely. During warm weather the pigs are less liable to be-

come chilled and will generally find their way to the teats unaided. During extremely cold weather the pigs will be in danger of being chilled unless the hog house is heated. To remedy this, wrap a few heated stones or bricks in a bag and place them in the bottom of a basket and cover them with chaff or straw. Place a bag over the top of the basket to keep in the heat. If the sow does not object too seriously the pigs may be rubbed dry with a soft cloth and placed in the receptacle as fast as they arrive. They will not suffer if they do not suck for a few minutes after far-



Encourage the Pigs to Eat Grain at an Early Age

rowing. After all the pigs have arrived and the sow has passed the afterbirth, the pigs should be placed with the sow, care being taken that each one gets a teat. The afterbirth should be removed from the pen and burned or buried. There is good reason to believe that eating of the afterbirth is often the beginning of the habit of eating pigs. For the first 24 hours after farrowing, the sow should have no food, but should be given a liberal drink of warm water. If she shows signs of hunger a thin slop of bran and middlings may be given. The feeding for the first week should be light and the time consumed in getting the sow on full feed should be from a week to ten days, depending on the size and health of the litter. If she is not being properly fed the little pigs will show it. When a sow is over-fed, causing a heavy flow of milk, scouring is generally produced in the pigs. If this takes place the sow's feed should be cut down immediately. A small portion of lime water added to the slop will aid greatly in correcting this.

After the sow has farrowed it is best for her to be in the open air. It is very necessary that the little pigs get plenty of exercise and plenty of sunlight. If they do not get exercise they will get fat and lazy and the usual result is the thumps. Of course, if the

Silos on Eastern Farms—IV

By W. H. TOMHAVE

In this, the last of this series of articles on the silo, we will take up the question of feeding silage, or the finished product, to farm animals. Feeding of the silage may be begun as soon after the contents are put in the silo as desired, but on most farms it is a common practice to open the silo only when the winter feeding period begins. This is especially true where the live stock is maintained on pasture during the summer.

If the contents of the silo have been standing for some time, it will be necessary to remove the upper portion, which is usually decomposed or spoiled. The amount of this will vary in depth from 6 inches to one foot, depending upon

ple of days. It should be removed in uniform layers, but if necessary it may be removed from one-half of the surface one day and the other half the following day. In this manner enough is removed to keep it from spoiling and none of the silage is exposed for too long a period. It is a desirable practice to keep the center higher than the outside, as by such handling the silage will be kept lower next to the wall and during the winter will result in less freezing. During cold weather when there is danger of freezing, the material from around the walls should be thrown to the center. Never allow a large amount of frozen material to accumulate around the outside. If the frozen silage is allowed to remain in the silo the amount affected by the frost will increase and in a short time there will be several feet of silage around the walls that is frozen solid. This may be avoided by proper handling. The frozen material next to the walls, if allowed to remain in the silo until warm weather, will spoil and cannot be used as a feed for farm animals. A silage fork is probably the best instrument with which to take the material out of the silo. This kind of a fork can usually be secured from any hardware store. Since silage is bulky and is usually fed in large amounts it is well to have large baskets in which to provide litter carriers or trucks in which a considerable amount can be handled at one time.

The feeding of silage is becoming more universal every year for all classes of live stock. There is no class of live stock on the farm to which it cannot be safely fed and with good results. The amount to feed will depend entirely upon the conditions.

Silage was successfully fed to dairy cattle prior to its general adoption for beef cattle and other classes of live stock. In the early history of silage feeding, it was regarded essential because of its succulence and not so much for its actual feeding value. This, however, has changed with the use of more mature corn in making silage. Practically every dairyman feels the need of a silo in order to have silage for his herd of cattle most of the year. The amount of silage to be fed dairy cattle will depend to a large extent upon the amount of other grains and roughage fed. Where the customary amount of grain is fed, most rations will contain

pigs are farrowed during the winter months it will be necessary to let them reach the age of two weeks before turning them out in the weather. A lot adjoining a barn, that is sunny and sheltered from cold winds, where the sow and pigs may be turned for exercise, is an ideal spot. Young pigs should not be allowed to run out during a cold rain. Encourage the pigs to eat grain after they are three weeks old and build a creep for them so they can eat alone. Do not be in too big a hurry to wean the pigs. When the pigs arrive at the

age of six weeks it is plenty soon enough to wean them, provided that skim milk is available. If skim milk is not available it will be better to defer weaning until the pigs are eight or ten weeks old. After the little pigs have been successfully weaned and all are healthy and possess good appetites, the most tedious and difficult phase of hog raising is past. Good management, however, is just as necessary to bring them to maturity as it is to raise them to weaning.
Pennsylvania.

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from 25 to 30 pounds of corn silage per head daily, in addition to some other roughage, such as clover or mixed hay. During recent years silage has been more extensively fed to beef cattle and is now regarded as one of the most desirable roughages for both breeding animals and cattle that are fattened for market. Wherever corn silage has been fed to beef cattle, it has been possible to reduce the cost of maintenance. The amount of silage to feed mature breeding animals will range from 30 to 60 pounds per head daily, depending upon the other feeds used. Where it is fed as the sole roughage, cows will consume 50 to 60 pounds per head daily. When fed in addition to 8 to 10 pounds of dry roughage, such as clover, mixed or alfalfa hay, it is usually given in amounts ranging from 25 to 30 pounds per head daily. When no other roughage is fed, a 1000-pound steer will consume from 50 to 60 pounds per head daily, provided no grain is fed in addition, with the exception of from 2 to 3 pounds of cotton seed meal per head daily. If from 10 to 15 pounds of corn are added, the amount of corn silage consumed will not exceed 30 to 35 pounds per head daily. When from 6 to 10 pounds of mixed hay or other roughage are fed in addition to the cotton seed meal, the cattle will not consume more than about 25 pounds per head daily. When corn is added to this latter ration, the amount of silage must be restricted to about 20 pounds per head daily. Practically all experiments show remarkable results from the use of corn silage as a feed for fattening steers. The daily gains and the returns from the feeding operation are usually in direct proportion to the amount of corn silage allowed. During the winter of 1915-16 one group of steers at the Pennsylvania Experiment Station was fed on a ration composed of corn silage and cotton seed meal. The cattle consumed 66 pounds of corn silage per head daily and in addition 3 pounds of cotton seed meal. This lot of cattle made an average daily gain of a little over 2 pounds per head and returned a greater net profit than the other lots in which only a portion of the ration was made up of corn silage, or where no silage was fed. This would seem to indicate that the use of silage is most valuable as a feed for fattening cattle. Silage when fed to cattle not only has a tendency to keep down the cost of the ration, but also improves the ability of the cattle to assimilate the food nutrients in the other feeds.

Considerable experimental work has been done in feeding corn silage to sheep. It is also practiced on many farms where sheep are kept. Sheep will, as a general rule, relish corn silage and do well on this feed, if it is supplemented with a concentrated feed of some kind, or with clover, mixed or alfalfa hay. The amount to feed in addition to other feeds will depend somewhat upon the size of the sheep. Experiments indicate that 3 pounds per head daily is a satisfactory amount. This may be increased slightly or fed in smaller amounts if deemed advisable. It is essential, however, that silage fed to sheep be in good condition. Frozen or moldy silage should not be fed to sheep, as it is likely to give bad results, and losses frequently occur.

The feeding of corn silage to horses has not been extensively practiced and probably never will be. It can be fed in small amounts, especially to breeding animals, as a succulent feed to keep them in good physical condition. The feed itself is too bulky to be fed in large amounts, especially to fattening animals.

Butter, Butter-Fat and Overrun

(Concluded from page 322)

of the transaction, deal or trade, it is quite natural for him to endeavor to get as large an "overrun" as possible—honestly if he can, but get a big "overrun" is said to be a principle of business in at least a few cases of creamery management.

HOW TO GET A BIG OVERRUN.

Some one may be ready to ask, how is it possible for a creameryman to get more than a normal, or average "overrun"? This is done in several ways, among which we may mention:

1. By deducting a little from the weights of milk and cream delivered by each patron. In case of cream, a reduction of one-half pound on 500 deliveries of cream testing 40 per cent. fat, would mean 100 lbs. fat to help swell the "overrun." We are not saying that creamerymen are dishonest, but to weigh within half a pound of actual weight is considered "good business" by some. The lesson is that each cream seller should have correct scales and weigh each lot of cream sold or delivered.

2. By "cutting the tests." Most states now have laws making it a misdemeanor to "cut" either weights or tests, but these laws are very difficult to enforce, unless a man flagrantly violates them. A man who desires to be on the "safe side" may easily underread a test of cream one-half to one per cent, and it would be a difficult matter to prove that the reading was incorrect, because two men, equally competent and honest, may easily make a difference of one-half per cent. fat in their readings from the same sample of cream. A cream seller should have a Babcock test and test milk or cream sold, in order to check tests given by the buyer.

3. By incorporating an excessive amount of moisture and salt with the fat in making butter. As previously stated, the legal maximum moisture limit in most countries is 16, and some makers are so skillful that they are able to so closely approach the legal water content at all times, that they make a favorable "overrun" at all seasons. Other makers are not able to do this, or they exceed the legal requirement at times and are subjected to heavy fines.

Summing up, the following are brief definitions of the terms at the head of this article:

BUTTER.—A mixture of milk fat, water, curd and salt, in more or less definite proportions, one or two of which are usually fixed by law.

BUTTER-FAT.—The fat of milk which is churned and forms the chief part of the product known commercially as butter.

OVERRUN.—The extra yield of butter over fat in milk or cream, which is usually expressed in the form of percentage.

Queries Answered

Crippled Pigs.—L. W. R. Pennsylvania, writes: "We have a sow weighing about 300 pounds and quite fat. We think she was affected by the heat about two weeks before farrowing. At least she refused to eat and farrowed to lie in a mudhole. She got better before farrowing so she would eat a little. She had 13 pigs and two of them came dead; the others appeared healthy and awfully smart. She did not have milk enough for them all and we took some away from her. About two days later, those left with the old sow began getting lame; finally two of them got so bad we killed them. At first they appeared to be lame in the back and hindquarters, and then they got so bad they could not get up at all. Then they had sores on their under jaws. We took them off the sow and fed them. They ate heartily and grew as fast as the others. They act as if they were paralyzed. We have another one in the same condition now. Do you think the trouble came from the sow being overheated? What do you think it is and do you think there is any cure for them?"

The crippling is due to digestive derangement, which is due to an abnormal condition of the sow's milk. This was no doubt due to the sickness before farrowing. Give each crippled one about 2 teaspoonfuls of raw linseed oil and follow up with one grain of nuxvomica three times daily. Feed on laxative food, as new milk and a little middlings and green grass. Provide dry, comfortable sleeping quarters, and so soon as they can walk, see that they get regular exercise in a grass lot daily, but don't allow them to be exposed to the sun during the heat of bright days. We do not see why they should not recover.

Recurrent Mammitis.—Cow Sucks Herself.—H. B. H. Pennsylvania, writes: "1. What is the cause of a cow giving yellow and stringy milk about every two weeks, and just from one test? Is there a cure for it? 2. I also have a cow that sucks herself; is there a cure for that?"

1. This recurrent mammitis without appreciable cause, indicates tubercular disease of the udder. If this is the case, it is unsafe to use the milk. Probably the best method of diagnosis is the tuberculin test by a veterinarian. A periodical examination of her milk by a bacteriologist would discover the bacilli, if present, but they are not always present in the milk, and several samples would have to be tested in order to make a reasonably definite diagnosis, hence the tuberculin test is better. 2. Put an ordinary bull ring into her nose in the ordinary manner, and into this hang another bull ring, or a ring of about equal size.

Spavin.—J. C. P. Pennsylvania, writes: "I have a driving mare that has what they call bone spavin on her knee; have used a spavin cure but it does no good; the lump is the size of a small egg; she also interferes in fast trotting. I thought it came from that, as it got very sore on the first joint above hoof and has an enlargement yet. The trouble began last March; she also broke out in sores in patches on different parts of the body. I suppose it came from overheating, as she is fast traveler and worries herself. The lump on the knee is very sensitive to the touch."

The most successful treatment is to have it fired and blistered by a veterinarian, and there are some cases that even this will not cure. Another operation consists in severing a tendon that passes over the front of the hock. Either of these requires a veterinarian. If one is procurable it will be wise to get him to operate. All that you can do is blister. In some cases this effects a cure, but in many cases fails. If you decide to try, get a blister made of 2 drams each of biniodide of mercury and cantharides mixed with ounces of vaseline, clip the hair off the front and inside of the hock. Tie her so that she cannot bite the part. Rub the blister well in. In 24 hours rub well again with the blister, and in 24 hours longer apply sweet oil. Turn loose into a box stall now and oil every day until the scale comes off. Then tie up and blister again. After this blister once a month so long as you can give rest or until you effect a cure of the lameness or decide that the treatment is useless.

If you catch the interfering, the enlargement caused thereby can be reduced by rubbing a little of the following liniment well in once daily, viz., one made of 4 drams each of iodine and iodide of potassium, and 4 ounces each of alcohol and glycerine. R.

International Live Stock Exposition

Many of our readers will be interested to learn that the premium list for the International Live Stock Exposition which is to be held at the Union Stock Yards, Chicago, December 2nd to 9th, 1916, is now out and ready for distribution, and those interested may obtain a copy by addressing the secretary, Mr. B. H. Heide, Union Stock Yards, Chicago.

An examination of the premium list brings out the fact, that to stimulate interest in pure-bred live stock and as an extra incentive to have breeders bring out where they exhibit, the Exposition this year offers a more extensive and liberal classification than in the past. We hope many of our readers will exhibit at the Live Stock Exposition, as we believe it is an important factor in encouraging the growth of the industry in this country.

To Get the Sheep in After Dark

Those who have had any experience in handling sheep will know how difficult it is to get them into a barn or shed after dark. The interior is dark and they are afraid to enter. Of course it is possible to catch one or two and carry them inside, but even then the rest will not follow. A lantern placed where the sheep can see it frightens them away instead of enticing them inside. But a lantern placed just inside the door and to one side, illuminates the interior of the barn and does not frighten the sheep. The sheep will readily and quietly enter a barn lit up in this way.

Live Stock and Dairy Prizes

We have awarded the two prizes for the best articles contributed by our readers and published in the Live Stock and Dairy department during the month of August, as follows:

First prize (\$6.00) to E. A. Wendt, for his article, "Points from My Experiences with Cows and Horses," page 319, issue of Aug. 15th.

Second prize (\$4.00) to Robt. E. Whitman, for his contribution, "Why We Should Raise Hogs," page 317, issue of Aug. 15th.

Producing Clean Milk for Babies

(Concluded from page 325)

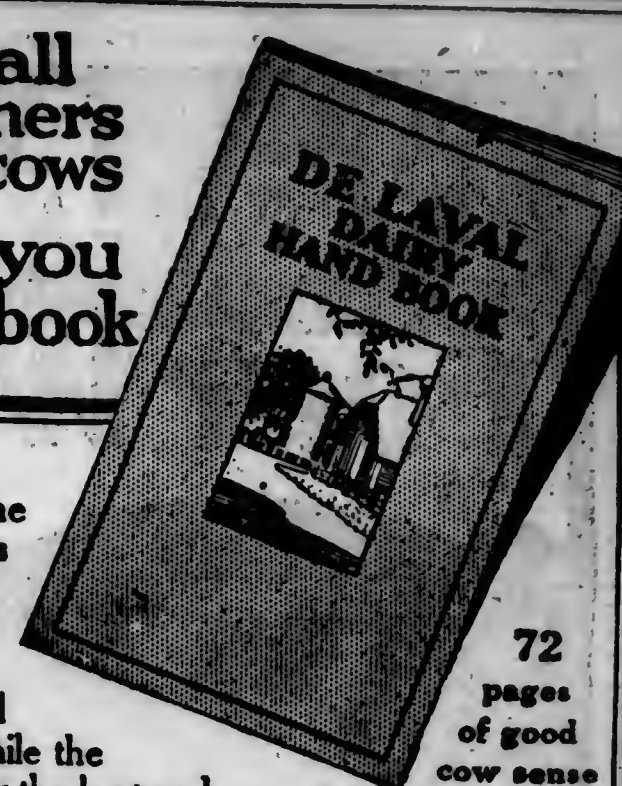
they increase your profits, but because they protect the customers from disease who are using your products. The fly is the worst offender and great care should be taken in protecting the milk and all utensils from this insect disease carrier. Since I have become a dairyman I have found that the business of farming requires just as much thought, just as careful watch over expenses, and in increasing production, and in marketing, as the manufacturing of any other product, and when a man can show mechanical means of cutting costs, saving labor, increasing efficiency, I'm interested. And I am proud to be a farmer, to make my living farming."

The dairy cow requires an ounce or more of salt a day, and while she should be given all she needs, she should not be forced to take more than she wants. It is best, therefore, to give only a small quantity on the feed, and to place rock salt in boxes in the yard.

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"How a Dairyman Made Good"—a real story of a real farmer, who starting with almost nothing, built up a fine dairy herd and made a big success.

"Year Around Feeding of Dairy Cows"—by an authority whose advice is well worth heeding. The importance of proper feeding deserves more attention from every cow owner.

"How to Judge a Dairy Cow."—shows by illustrations what points to look for in a dairy producer—explains the essential qualifications of a good dairy cow.

"Building Up a Dairy Herd"—a practical breeder gives sound advice on this important subject.

"The Farm that Won't Wear Out"—shows that the farm where cows are kept, and the fertility returned to the soil, improves instead of deteriorates.

"The Care of Cream on the Farm"—quality is as important as quantity. It costs little and brings big returns.

"Silos and Silage"—one of the best for in a dairy producer—explains the essential qualifications of a good dairy cow.

Then there are splendid articles on "Alfalfa," "Ventilation of Dairy Barns," "Breeds of Dairy Cattle," "Improving the Herd with a Good Bull," "Care of Freshening Cows," "How to Test Cows," etc. Numerous dairy tables, suitable for various sections of the country, are given, and various milk and dairy tables as well as tables of weights and measures, also capacities, etc. that every farmer has occasion, at some time or other, to refer to.

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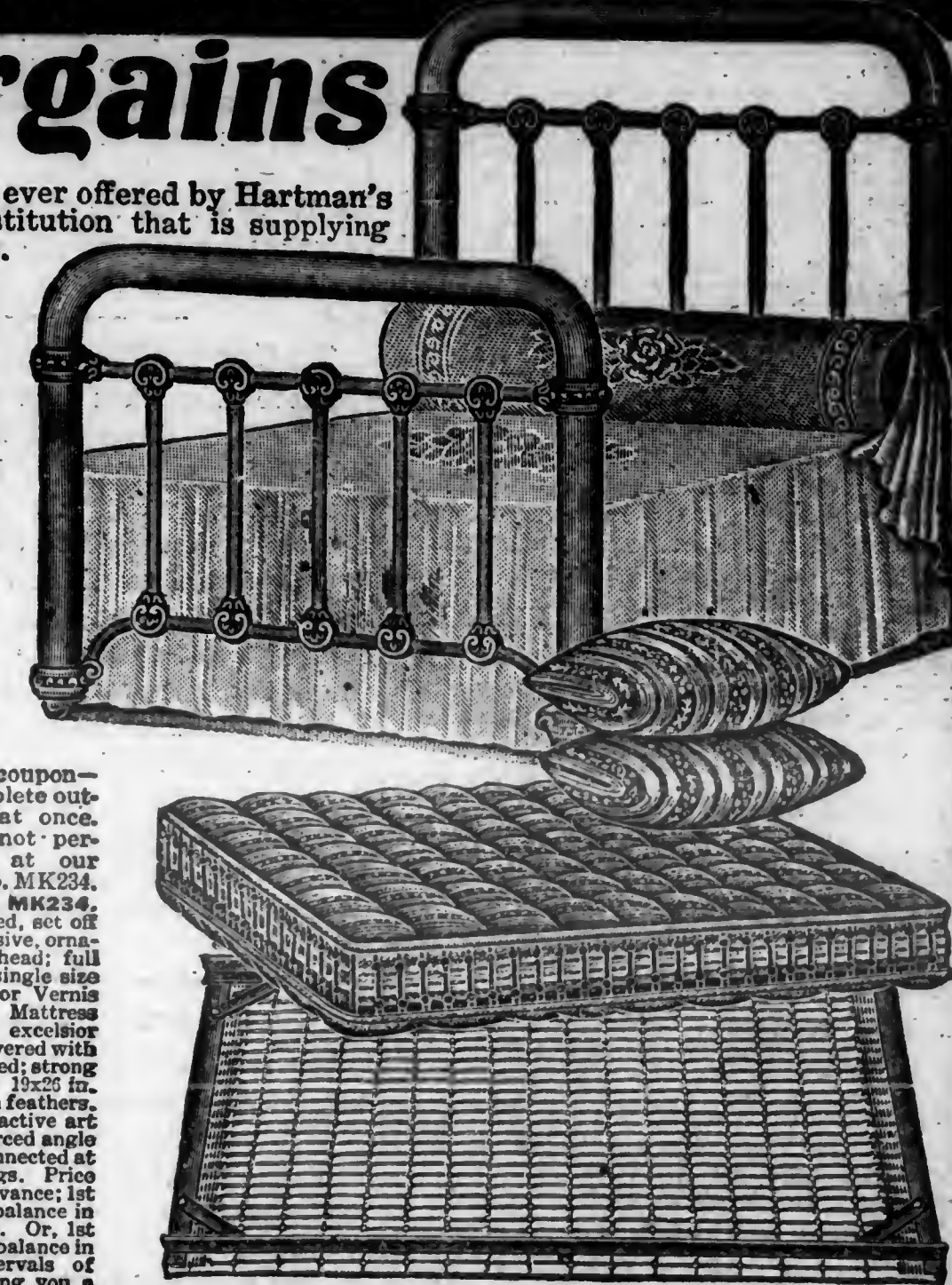
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Just think what a wonderful heater this must be when we are willing to send it to you on such unheard of liberal terms, without the slightest obligation on your part! Not a cent in advance—just your bare request on the coupon brings it to you. We absolutely guarantee your complete satisfaction on this heater. If it isn't all, and even more than you expect, return it at the end of 30 days at our freight expense. You will not be out a cent. If you keep it, pay in small 30 or 60 day payments, as best suits your convenience.

Sensational Heater Bargain

Vulcan Heater No. MK231. Inside diameter fire pot, 10 1/2 in.; diameter of body, 16 in.; height to top of air, 60 in.; opening of feed door 12 1/2 in.; door space 24 1/2 in. Air is admitted through hot blast tube and passes in and entirely around body of stove. The hot air mixing with gases and smoke seethes rise, ignites them, around perfect combustion—the heat which with ordinary stoves passes up the chimney is all utilized in the Vulcan. Draw center shaker grate is made for either wood or coal. Shaker door permits shaking of grate without opening ash pit doors, preventing dust and smoke from falling out. A special feature is the solid iron base, giving additional strength and rigidity. Stove is fully nickel-plated. Price only \$14.85. Terms: first payment of \$1.50 in 30 days; balance in 9 equal monthly payments; or, first payment of \$2.50 in 60 days; balance in five equal payments at intervals of two months.



Order
Direct
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3-Piece Library Set
Solid Oak Correctly Finished Fumed
6 Springs in Seat

Grand Bargain in Library Set

You can have no idea how this elegant 3-piece set will brighten up a room. Send for it today. Just send coupon—no money. We will ship it at once. No C. O. D.—no deposit—no references asked as others do—no obligation to keep it. Return at our expense if not satisfactory. Compare it with 3-piece sets costing twice as much and you will understand what a remarkable bargain it is at our low price of only \$15.85. Order by number.

3-Piece Library Set No. MK229. Solid oak in fumed finish. Adams period design. Table top 32x26 in. Stands 29 in. high and has 7 in. shelf. Legs cut from 2 in. stock, fitted with nickel-plated slides. 6 1/2 in. center panel with artistic carving. 4 in. apron trimmed with Adams line carving. Chair and rocker of solid oak with genuine quarter-sawn arms. Finish, trimmings and carvings match table perfectly. Chair 41 in. high; rocker 37 in. high; width 26 in.; arms 42 1/2 in. in between arms. Seats 16x20 in., filled with wood shavings and moss. Supported with six heavy steel springs resting on steel channel bars. Top rail 7 in.; front rail 4 1/2 in. Seats and backs upholstered in guaranteed Spanish imitation leather. Price \$15.85. First payment of \$1.50 in 30 days; balance in nine equal monthly payments; or, first payment of \$2.50 in 60 days; balance in five equal payments at intervals of two months.

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Will Trust You

In This Issue: Breeding and Feeding for Dairy Purposes

The Practical Farmer

PUBLISHED
CONTINUOUSLY
SINCE 1855

Volume 112
Number 18

PHILADELPHIA, SEPTEMBER 15, 1916

50 Cents Per Year
3 Years for \$1.00



The Practical Farmer Offers Prizes to Boys

On the Editorial page of the September 1st issue of this paper, under the caption, "Reclaiming Land and Boys," we commented on the vast number of acres of American land going to waste for the lack of a little expenditure of money and effort in clearing up and reclaiming it for farming purposes, and told of a plan originated by a manufacturer which coupled up the reclamation of some of this land with the utilization of "boy power" and the awakening of the interest of farmers' sons in the old home farm.

On this page is published the official announcement of this manufacturer in a "Land Reclamation Contest for Boys." It will be noted that this plan does not place any restrictions on the contestants as to the means used in reclaiming the land or specify any special crop to be grown on the reclaimed land; it provides only that the work must be planned and done, or supervised, by the boy himself, and that the prizes will be awarded for "the best results commensurate with cost."

The editors of The Practical Farmer are so thoroughly in accord with this movement for "reclaiming land and boys" that they want to get into it themselves—to help it along in every way possible. We believe that a great deal of reclaimable land is going to waste right here on the farms in the Middle Atlantic States which The Practical Farmer reaches; we believe that the farm boys in this section are as smart, as ingenious and as industrious as the boys in any other section of the country—if not more so; we believe, therefore, that our boys have the opportunity and ability to accomplish as great results as the boys in any other section of this great land of ours—if not greater. And we want to know how our boys are going to rise to this situation.

Accordingly, The Practical Farmer has decided that it will offer some prizes on its own account in connection with this Land Reclamation Contest for Boys—but our prize proposition will be a little different than that of the manufacturer who originated the plan—what we want is the story of what each boy undertook, what difficulties he met, how he overcame them and what the final result is, all told in the boy's own words and for the benefit of the editors and readers of The Practical Farmer. So here is our proposition to our boys:

In the first place, we consider the rightful territory of The Practical Farmer—the area in the interest of which this paper is edited and published—as the states of Pennsylvania, New York, New Jersey, Delaware, Maryland, Virginia, West Virginia and Ohio, and accordingly we must limit our contest to boys living in these eight states. We invite each boy in any one of these states who enters the Du Pont Land Reclamation Contest for Boys to submit in our contest the true story (in not less than 900 words, or more than 1200 words) of the condition of his one acre of land when he undertook its reclamation, what he did to reclaim it and how he did it, what peculiar difficulties he met in the work and how he overcame them, what crop he planted, how he pre-

Land Reclamation Contest for Boys

\$600.00 in Cash Prizes

Big opportunity for boys who can turn waste land into fertile fields
Open to every boy in this country

Here's a real opportunity for your boy—a chance for his greater development. A contest that will prove his mettle and make its proving profitable to both you and him. Something that will increase his interest and help keep him on the farm.

The Reason for the Contest

There are millions of acres of land literally going to waste in this country today because of stumps, stones, boulders, swamps, crooked streams, gullies and other conditions that handicap farming. Remove these troubles and this ground can be turned into fertile, profitable fields. We know it can be done. Here's the way

—a way that will prove

A Money Maker for Both You and Your Boy

Perhaps you or your neighbor have a bad spot on your place. If so turn one acre of it over to your boy. Let him improve it. If it is covered with stumps or boulders let him clear it. If it is swampy let him drain it. He can use any method or means of reclamation that he sees fit. We do not even insist upon the use of dynamite, although in most cases it is the most efficient method. The main points are, to clear the land, improve the soil and raise a crop. Any kind of crop can be raised, but all work on this one acre must be planned and done or supervised by the boy himself, and—

To the boys in each section of the country (see below) showing the best results commensurate with cost we will award the following prizes:

North Atlantic States	(Maine, New Hampshire, Vermont, Massachusetts, New York, New Jersey, Delaware, Maryland, Virginia, West Virginia, Pennsylvania)	1st Prize, \$50.00	2d Prize, \$30.00	3d Prize, \$20.00
South Atlantic States	(Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee)	1st Prize, \$50.00	2d Prize, \$30.00	3d Prize, \$20.00
North Central States	(Illinois, Indiana, Iowa, Michigan, Minnesota, Nebraska, North Dakota, South Dakota, Wisconsin)	1st Prize, \$50.00	2d Prize, \$30.00	3d Prize, \$20.00
South Central States	(Arkansas, Kansas, Louisiana, Missouri, Oklahoma, Texas)	1st Prize, \$50.00	2d Prize, \$30.00	3d Prize, \$20.00
Western States	(Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming)	1st Prize, \$50.00	2d Prize, \$30.00	3d Prize, \$20.00
Pacific Coast States	(California, Oregon, Washington)	1st Prize, \$50.00	2d Prize, \$30.00	3d Prize, \$20.00

In case of a tie each tying contestant will get the same prize as though only one were the winner

Additional Prizes

Besides the above cash prizes to winners we will present each contestant receiving honorable mention with a one year's paid subscription to any farm paper published in the United States—contestant to choose paper.

Conditions of Contest

The Du Pont Land Reclamation Contest for Boys will start officially at once. All entries must be received not later than January 1, 1917.

The contest will close December 1, 1917, and all reports must be in the hands of the Du Pont Agricultural Division before December 1, 1917.

Each entry blank provides for the official entry of only one (1) acre (43,560 sq. ft.) of ground. If a greater number of acres are entered by any one contestant a separate entry slip for each acre so entered must be sent in.

Reports and records of each acre entered by a contestant will be required. Special blanks are provided for this purpose and will be sent upon receipt of entry blank.

In returning report blank for final award each report must be verified by the County Agricultural Agent or two neighboring farmers, not relatives.

Now is the Time to Act

Every boy has an equal chance. See that your boy sends in his official entry today. Have him fill in the entry blank carefully and mail it now. A prompt start will help win a prize.

E. I. du Pont de Nemours & Company, Wilmington, Delaware

P. Far

Here add any preliminary information you wish to offer.

Name..... Age.....

City..... R. F. D. No.....

State.....

ENTRY BLANK

(Date).....1916

The Practical Farmer, P. O. Box 1321, Philadelphia.

Please enter me in your Land Reclamation Story Contest. My age is years.

(Name).....

P. O. R. F. D. State.....

pared the land for it, cared for and harvested it and the yield in quantity and in dollars and cents from the reclaimed acre—in short, the whole story of his work and its results.

For the best manuscript submitted in this contest we will give a prize of \$25.00; for the second best manuscript a prize of \$15.00; for the third best manuscript a prize of \$10.00, and to each boy submitting a manuscript worthy of honorable mention we will give a three-year subscription to this paper. In case of a tie for any prize the same will be divided among the successful contestants therefor.

In judging the manuscripts the points taken into consideration will be four in number: First, the record of accomplishment—that is, the results obtained and the cost; second, the particular difficulties encountered in the work and the ingenuity displayed in overcoming them;

third, the interest of the manuscript itself—the ability of the boy to tell his story in a clear, readable, interesting manner; fourth, appearance of manuscript as to writing, neatness, etc.

Photographs, while not essential, are desirable and will be paid for if used.

The judges of The Practical Farmer contest will be, one of the judges of the Du Pont contest, one member of the Editorial Staff of The Practical Farmer and one member of its Business Staff.

It will be noted that whereas the award of the prizes in the Du Pont Contest is to be based solely on the best results commensurate with cost, The Practical Farmer Contest takes several other points into consideration; accordingly, the winners in our contest may not be the same as the winners for this particular section in the Du Pont Contest.

Now, boys, here are two opportunities for you to win prizes, so get busy at once, and show us all what you can do. Don't overlook the fact that, whether you win a prize or not, if you go to work systematically and persistently you will create productive land out of what is now waste land, you will learn a great deal that will be of value to you

in later life and doubtless you can strike a bargain with father or neighbor to obtain proper payment for the new land value you create.

Farm fathers and mothers, see that your boys enter these reclamation contests and encourage them in every possible way to do their best and show the stuff that is in them; when the contests close you will find that besides adding to the tillable acres of your farm, the boy will have found himself, and you will have done much to make a farmer.

The Practical Farmer Contest is open for entries right now and closes simultaneously with the Du Pont Contest. A boy within any of the eight states mentioned above, entering the Du Pont Contest, has only to fill out the entry blank herewith and mail it to us to become a contestant. All entries must be made prior to January 1, 1917—and the sooner the entries are in the better. Promptly on receipt of entry blank we will send the entrant full particulars as to the terms of the contest and will from time to time be glad to help him in any way possible by information or suggestion. Fill out the entry blank and mail it in today.

A TWICE-A-MONTH JOURNAL of practical, every-day experience for, and by, men and women who take their living from the soil.

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Number 18

Breeding and Feeding for Dairy Purposes

By JOHN UNDERWOOD

WITH all classes of live stock it is a matter of importance before the animals are used for breeding purposes to allow sufficient time for quality and character of the parents on both sides to reach proper development before the progeny is reared. In many cases defects, either constitutional or otherwise, do not show until the animal has attained full development. In nearly all classes of live stock the best animals are the offspring of parents mature and well developed on both sides, or animals that have made a vigorous, thrifty growth from birth, and when bred are in good, healthy condition. Too young breeding is a drain upon the vitality and in many cases the animal never fully recovers from the effects. As a general thing, however, the dam suffers from too early breeding more than the sire.

One of the best plans of management when breeding from animals which have not reached full development is to mate them to older and more mature sires. If the sire is young he should be bred to older and more mature dams, but the dams that are being bred for the first time should be mated with well matured sires that have proved themselves good breeders.

In breeding up a dairy herd a judicious selection of both sire and dam is vitally important and then must be pursued a system of feeding and management suited to the purpose for which the animals are being raised. Too many dairymen follow out these principles only in part. For instance, there are scores of dairies where a comparatively high-priced pure-bred sire has been purchased and used, but the owner has paid little or no attention to the possibilities of his cows and the result has naturally been that some of the stock is good and some poor. The owners then say it is all bosh to talk about high-class sires for their calves do not average much, if any, better than those from the ordinary sire.

But the matter of careless feeding and management is the most common mistake. Too many believe that the feeding of the last few weeks before parturition is all that is necessary to develop a heifer into a first-rate milk producer. I am aware

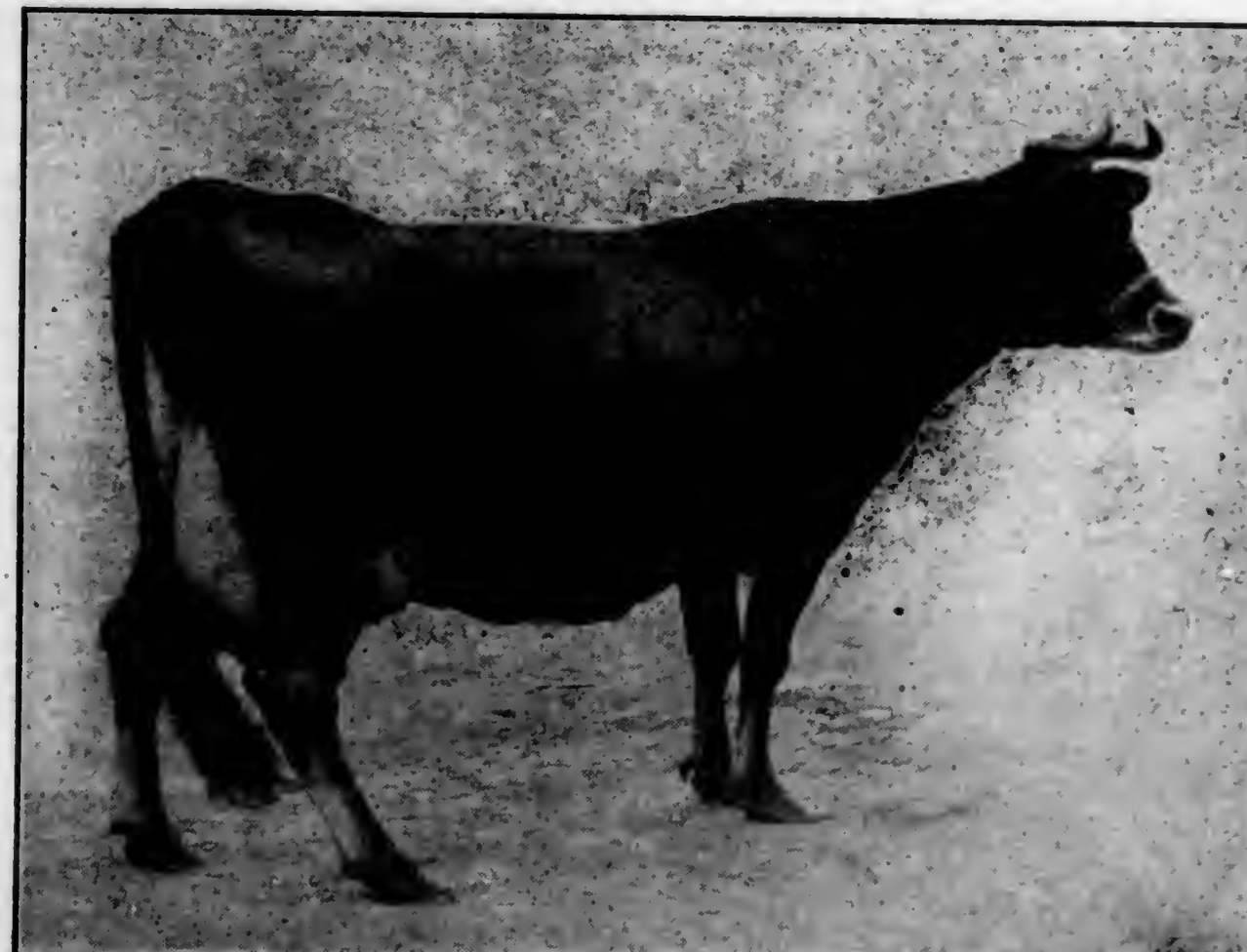
that I step out on to what may be termed theory when I say that the manner of feeding and handling the cow during conception exerts almost as much influence over the nature and capabilities of her calf as do the few months after its birth, but if it is called theory it is most certainly a reasonable, common sense theory, for no one can dispute this fact that during conception the mother and offspring in embryo are identically one and the food that nourishes the one also gives life and growth to the other. This being the case, what may be called theoretical by some, becomes practical.



A Fine Ayrshire, with a 2-Year-Old Record of 14494.8 Lbs. Milk, 643.4 Lbs. Butter

profitable cow, but if she lays it on her back as fat she is not a fit subject for the modern dairy. The cow that has a tendency to lay on fat is to be avoided always if one wants cheap milk production. The size of the cow has little or nothing to do with the cost of milk production, as has been abundantly proved by experiments. It has time and again been demonstrated that there are large cows with comparatively small feeding capacity; and, on the other hand, some small cows have even greater feeding and digesting capacity than some of the larger ones. In my own herd I have both of these kinds of cows, little cows that eat much and big cows that eat less, but they are all profitable, otherwise I wouldn't lose a minute's time in getting rid of them and putting better ones in their places. Some cows with short legs and light quarters will barely turn the scales

A Good Guernsey—a New York State Prize Winner



Springfield Owl's Eve 1913-14
One of Meridale Farm's Wonderful Jerseys—an American Jersey Cattle Club Gold Medal Winner.

It is true that the matter of selection in breeding can, and does, do considerable toward improvement and the same is true of judicious feeding for a purpose, but in order to attain the most desirable results they both must go together, for neither is alone a success. I can assert from my own practical experience that by carefully practicing both it is an easy matter for any dairyman in a comparatively short space of time to considerably increase the product of his cows. Even if this had not been proved by experience it is reasonable enough for any one to believe.

A certain proportion of the food of a cow is utilized in running her machinery and the question is, what does she do with the surplus of her food? If she returns it in the form of milk she may be a

at 900 pounds and yet, having a capacious middle, will eat and digest more than others with long, heavy quarters with a comparatively light body and weighing 1200 pounds. Small or medium cows have greater digesting capacity in proportion to their size than large animals. This seems to hold with all domesticated animals not only as far as feeding capacity is concerned, but in strength and endurance as well. In breeding to increase size we always fail to increase strength and endurance or speed in the same proportion.

That the cost of maintenance is fairly measured by the size of the animal is true only in a general way. The temperament of the cow must be taken into consideration. An animal having a highly developed nervous system will, under certain conditions, require more food for maintenance than will another animal of the same size under similar conditions but not having a highly developed vital temperament.

Breeding is an art that calls for something more than a simple mating of animals of the desired breed. There must not only be the qualities in the animals mated but there must exist also the power to transmit those qualities to the offspring. Feeding as an art calls for something more than a simple supplying of a sufficient amount to satisfy the appetite. It calls

(Continued on page 351)

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SEPTEMBER 15, 1916

The Tail Has Wagged the Dog

AN old-time friend and subscriber of The Practical Farmer writes us protesting against an article which appeared in our Editorial columns of the September 1st issue, captioned, "The Tail Wags the Dog." He thinks we are not subserving the interests of the farmer and other laboring men, in what we said in that article.

We think our friend failed to see the point which we endeavored to make. If he will read that article carefully, he will see that we do not undertake to decide that the demand of the railroad brotherhoods for an 8-hour day at a 10-hour rate of pay, was unjust or should not be granted if just.

What we did undertake to say then, and what we emphasize now is, that when the demand was made for the 8-hour day, and the counter offer was made by the railroad officials to arbitrate the whole matter at issue, that counter offer should have been accepted by the brotherhoods. In other words, arbitration should precede the strike, and thus make the strike needless, or at the most the *denier ressort*.

The hopes and efforts of all fair minded men, employers and employees alike, have tended more and more to arbitration as the proper method of settling the disputes between these two interests, and progress has been made in that direction which shows it to be the most satisfactory method which has been yet tried. If arbitration is the proper and most economical method in wage and labor controversies which affect a comparatively small proportion of the people of the nation, how much more the reason that it should obtain in a controversy which materially affects the entire nation.

It is inconceivable to us that a body of 400,000 workers should be allowed to dictate terms to 100,000,000 people, and threaten action which will paralyze the railroad facilities of the nation, unless those terms are immediately and unconditionally accepted. It must not be lost sight of, either, that the cost of this demand, if granted, must be paid by all the people, every family in the country paying a share, to say nothing of the loss which would have also fallen on the same shoulders if the strike had been actually put in force.

We consider the Adamson bill, now a law, one of the greatest blows which arbitration has yet received, because it establishes a precedent which may be effectively used to discourage arbitration between employers and employees, where the latter are organized into unions which dominate any industry which affects any large proportion of the people as a whole, or all the people in any one section.

As we said above, the cost of an 8-hour law with a 10-hour pay, falls upon the whole people. If a board of arbitration finds that the demand is a just one, then the change should be made, and the cost charged up to the people in the shape of an increase of rail-

road rates. If the demand is not a just one, it should be denied.

Finally, it should not be forgotten that the four brotherhoods engaged in the controversy are a minor fraction, and the best paid fraction, of the railroad employees. And a square deal all around would involve the consideration of the claims of the larger and lower paid fraction. The brotherhoods seem to have overlooked the larger part of their companions in labor.

The Power of Organization

NO matter what one's opinion is of the right or wrong of the recent trouble between the railroads and some of their employees, one cannot but be impressed by this illustration of the power of organization and co-operation. Even though we may sometimes think that the power derived from organization is not always put to the best possible use, we must all agree that power, influence, and efficiency do accrue from organization whether it be of labor or capital, and that some of the greatest advances in commercial and industrial life have resulted from these co-operative organizations acting in unison.

We believe that the future of the farmer in this country rests largely on his ability to co-operate with his fellow farmers for the improvement, standardization and profitable marketing of his products. In recent issues we have published a number of articles touching on the various phases of this subject of organization and co-operation—notably an article on "Solving the Marketing Problem" by Mr. George Hildebrand, which appeared in our August 1st issue, and one entitled, "Co-Operation in Live Stock Breeding," by Professor W. H. Tomhave, in our August 15th issue—which we hope have been instrumental in starting some of our readers thinking along these lines. There are many ways in which we farmers can accomplish wonders in the way of improved products and better prices by concerted action which would be impossible for us working as individuals. We all approve this general proposition of co-operation in the abstract, but the trouble is that the majority of us fail to consider the matter in the concrete as applying to us personally. If every reader of The Practical Farmer would take this matter of co-operative organization home to himself and really put some thought and action into forming a working organization of some kind among the farmers in his immediate neighborhood, the record of accomplishment within the next year or two would be something to marvel at.

One of the most pleasing features of the new Federal Farm Loan Act provides for the organization, amongst borrowers, of National Farm Loan Associations, and grants to such associations privileges that will make their formation among farmers highly desirable. It is our hope that this bringing together of farmers in local associations for mutual benefit in the one direction, will be the stepping stone to the formation of other co-operative associations among the same farmers for mutual benefit in many other directions.

"Rural Credits" Activity

THE Federal Farm Loan Board—the administrator of the recently enacted Federal Loan Act—is busily engaged in the work of organization, holding hearings in various cities for the purpose of securing information with a view of determining the boundaries of twelve Federal Land Bank districts, and the location of one land bank in each district, and in a short time rural credits will become an active factor in the farmer's life.

In the meantime, however, certain other parties, not connected with the Government Administration of the Federal Farm Loan Act, have become active in trying to make a good thing for themselves out of the new law, for it has come to the attention of the Federal Farm Loan Board, that in various parts of the country certain parties are soliciting subscriptions to stock company organizations under different names, claimed to be operated under the Federal Farm Loan Act, and asking advance payment of such subscriptions, especially from farmers. The Board announces that until the land banks are established, no loans can be made, and accordingly warns the public that the representation by any person of any organization now offering to make loans by authority of the Farm Loan Board under the Federal Farm Loan Act is false, and any attempt to collect money under such representation is fraudulent and is punishable by fine and imprisonment under Section 31 of said act.

Instead of falling easy victims to fakers seeking to take advantage of the general lack of information

concerning the new law on the part of the farmers the law is designed to benefit, our readers should be informing themselves regarding the provisions and the operation of the new law, so that they may be among the first to receive its benefits. Already the Federal Farm Loan Board has issued two circulars, the first of which contains information regarding "The Organization, Management, Powers and Limitations of National Farm Loan Associations," and the second tells "How Farmers May Form a National Farm Loan Association." Either or both of these circulars may be obtained on application to the Federal Farm Loan Bureau, Treasury Department, Washington, D. C.; a copy of the Federal Farm Loan Act itself (Public Document No. 158) may also be obtained from the same source. We recommend that all our readers who may in the near future need money for the development of their farms, send for and make a careful study of these pamphlets. The new Rural Credit law can only be helpful to us in so far as we know how to take advantage of it.

Raising Farmers

ANYONE who has watched agricultural progress cannot but be impressed, not only with the steady improvement in varieties, cultural methods, fertilization, and in fact in every phase of the farming business, but as well with the improvement in the farmer's living conditions and social life. Farming is a better business today than it was 20 years, or even 10 years, ago and it is going to be a still better business in the coming years and in the next generation. The application of science to farming and the education of the farmers has done wonders in this generation, but the attainment of perfection is necessarily a slow process in any business, and in farming especially it takes many years of cross fertilization, of breeding or of soil improvement to accomplish the results aimed at. Accordingly, it is to the next generation that we must look for the results of the hard work and study for today—for the farmer to come fully "into his own."

That is one of the reasons why we are strong for giving the farm boys and girls a chance. People and live stock have this in common—that breeding and environment are important factors in accomplishment. We don't expect that cattle bred and raised for beef will prove very strong as milk producers; we can't believe that city bred men, raised in commercial surroundings, will do as much for the advancement of agriculture as our own boys and girls born and raised on the farm—provided, of course, that our boys and girls are given their chance in the way of agricultural education and the help and encouragement which it is within our power to give them. Of course, we are told frequently of how difficult it is to keep the boys and girls on the farm; some of the difficulty has been lessened and is being still further decreased by the improved conditions of the farmer's life, and his increasing opportunities for social enjoyment. We believe that the migration of farm boys and girls to the cities would be still further decreased if in their education and daily home life farm fathers and mothers would take the time and trouble to show their children the beauties of farm life as offsetting its drudgery and interest them in the miracles which are daily taking place on our farms through the development of agricultural science—and then give them the opportunity to experiment for themselves on agricultural problems with the possibility of making a little money of their own out of the experiments.

On page 341 of this issue is an article on "Boys' and Girls' Agricultural Clubs," by the man who has charge of this work at Pennsylvania State College; we intend to have more articles on this subject in future issues and we trust that not only our boys and girls but their fathers and mothers as well will find helpful suggestions in them. On page 338 of this issue a prominent manufacturer makes announcement of a Land Reclamation Contest for boys and offers substantial cash prizes to boys in the different sections of the country who produce best results, commensurate with cost, in the reclaiming of a single acre of what is now waste land; on the same page The Practical Farmer, being in thorough accord with this movement, and wanting to know just how its boy readers take hold of this problem, offers additional prizes for the stories of the reclamation endeavors of the boys entered in the contest. Not only is it worth while for our boys to enter these contests, but parents also will be amply repaid for the encouragement and help they give their sons, in the results derived from the contests, in making real farmers of the boys.

A Successful South Jersey Truck Farm

By R. E. ALLEN

Down along the Delaware river, in Burlington county, New Jersey, J. E. Marter does a little farming. That is, he grows some sweet corn, and some peas, and some beans, as well as a few peaches, cherries and plums. South Jersey truckers are usually big farmers on small farms. The average farm of the Delaware district is perhaps a little more than 60 acres in size, but many such farms can put some Western farmers, six times their size, to shame in the matter of cash returns.

J. E. Marter is one of these "big" farmers on a comparatively small farm. He keeps every square foot of his ground busy night and day producing fresh fruits and vegetables for the hungry thousands in Camden and Philadelphia. He has a 50-acre farm, half of which is more or less given over to peaches, cherries and plums. I say more or less because the ground between the trees is made to produce nearly as large crops as are grown where no orchard is planted. Naturally, Mr. Marter works his farm so as to secure from it as large an income as possible.

Experience has taught Mr. Marter that a trucker in his locality can make the most money by growing sweet corn, peas and beans. Accordingly he grows these crops. How well he grows them can be judged from the fact that he often makes as high as \$150 an acre from sweet corn alone.

The big problem with all South Jersey truckers is how to get the most out of their poor sandy soil and at the same time keep the humus and plant food content as high as possible. It is entirely out of the question for any one to make a living from the raw, unadulterated New Jersey sand. It must have humus and plant food added to it in wholesale quantities before it will produce anything like paying crops.

Three general methods of obtaining the necessary soil fertility are followed in South Jersey. These are the use of cover crops, the use of manure and the use of fertilizer. It is really a combination of two or even all three of these methods that is most used, for none of the methods named is in itself a perfect one. Cover crops add no appreciable fertility to the soil on which they are grown; manure is not available quickly enough for the rapid growth of truck crops and the humus supply would eventually become deficient if commercial fertilizer were used exclusively.

It is because he realizes that a combination of all three methods is the only perfect system for his conditions, that Mr. Marter makes use of such a combination for the maintenance of his soil. In addition to the cover crop of rye that he turns under, he uses more than 300 tons of manure a year and 30 tons of fertilizer. You can see that Marter does not believe in doing things by halves on his farm.

This year peas were a good money crop. Last year they were decidedly the opposite. Sweet corn is turning out very well this year. The price has ranged from \$1.75 to \$3 a hundred ears. Mr. Marter has 15 acres in market corn this year and usually pulls 5000 to 7000 ears per acre. If the price keeps up as it has been, there's sure to be money in that field of corn.

Mr. Marter believes that the ground he grows his market corn on can't be too good. He stuffs it full of green manures to decay and form humus, then plows under several tons of stable manure to the acre and finally, to supply the quickly available plant food that early corn needs, he applies 1200 to 1500 pounds of

Boys' and Girls' Agricultural Clubs

By C. W. CLEMMER

In Charge of Boys' and Girls' Club Work at Pennsylvania State College

The history of the corn club movement would take one back over an indefinite number of years, as it is common to hear of a new pioneer occasionally who claims to have organized the first corn club in America. Even though this mist may appear in the background, there is probably no doubt that one of the most influential movements toward the establishment of Boys' Agricultural Club Work in America was the work of the U. S. Dept. of Agriculture in the Southern states some years ago. It was when the ravages of the cotton boll weevil became widely known, that the government officials were called upon to save the cotton crops of the Southern states. One of the natural procedures was to suggest a rotation of crops and corn was considered as one of the most adaptable plants for that section.

Another problem now presented itself,

The Pennsylvania State College Extension Department will assist in organizing such clubs as may be deemed advisable by the local authorities, after due consultation with the Club Office of the College.

The objects of all agricultural club work are:

1. To interest the young people in farm and home life.

2. To develop them into better farmers, and more efficient farm women of the future.

3. To improve the character and value of farm crops and animals and their products.

4. To make home life in the country more satisfying and attractive.

Since the boys and girls generally make their own rules and elect the officers of their respective clubs, they are benefited by the association with others. Here they learn their first lessons in co-operation and the value of organization. The young people gain the quality of self confidence which aids materially in constructing their abilities of leadership in the future. Recreational features are emphasized, as this teaches the individual to exert physical and mental effort with pleasure, which can later be applied to other operations.

During the course of the season the boys and girls receive their elementary instructions on the proper methods of crop or live stock management; according to the project under which the club is working. It is recommended that regular meetings be conducted at stated intervals during the year. At these meetings the members can exchange ideas and experiences, have debates and social functions, and thus keep the life of the organization always in evidence.

To teach the young people business principles and economy of production, as well as to encourage observation and keen thought, the members are requested to keep accurate accounts throughout the season of all receipts and expenditures involved in the club project, and also note any particular incidents and factors influencing the work. At the end of the season each boy should receive a small token of recognition for the completion of this season's activities. A ribbon, emblem or diploma of some sort should be awarded to every contestant who finishes the tasks set out to accomplish. Six, eight or a dozen winners should receive special awards for their exceptional accomplishments.

No awards should ever be given as cash prizes and the monetary value of the prizes should be as small as possible, and still be sufficiently attractive. Such prizes as educational scholarships, purebred live stock, farm implements, agricultural books and any other objects of an agricultural nature or which will tend toward improving agriculture in the community, should be encouraged.

Avoid undue advertisement of business institutions, as the primary object of all should be for the advancement of agriculture and the young people of our rural districts.

The highest ambition of the members should be the honor of producing the best, and the ability to render unselfish service, rather than to strive to win the prize, no matter how attractive.

Club work appeals to the best boys and girls in any community and should have the support and co-operation of every man and woman, father and mother, who is interested in the welfare of boys and girls and in the development and prosperity of future agriculture.



A Comfortable New Jersey Farm Home and Buildings—the Kind that Intensive Farming in Truck and Fruits has Built on Many Farms in that State

Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

Winter Rye

In many sections of the country rye is becoming more extensively used than heretofore. Not that the crop is grown for its grain particularly, but for soil improvement and for winter and spring forage. It is generally thought that rye is "hard" on land. This is largely because, when used as a green manure, it has been allowed to stand too late in the spring before it is plowed under. In this case the rapidly growing rye when about to come into head takes up the moisture of the soil in large quantities, and, if the season is dry, the land cannot be put in a condition for planting without great difficulty. A similar mistake is made where rye is pastured during the late winter and early spring. If pastured when the ground is soft the soil is often "puddled" and becomes hard and cloddy when plowed. A little care in the management of the crop will offset these difficulties. Plow under the rye before it comes into head and keep the stock off when the ground is soft. Many farms in the Middle West are growing rye as a nurse crop to Red clover. When the rye is well started in the spring the hogs are turned on. Some of the rye will go to seed, but the hogs harvest the grain so that there is no waste. Under such conditions the hogs thrive well, as the clover furnishes green food as the rye comes into maturity. Furthermore, rye does not shade the ground as much as wheat and allows the clover to get a better start. The practice of hogging down rye is becoming quite popular in some sections. Dairy cattle do well on rye in the early spring. A farmer of my acquaintance grows a large acreage of potatoes each year. He finds that wheat will not stand up well after potatoes and seeds rye after the potatoes are removed. The rye gets well established before winter, as the potatoes are mature in the late summer. He pastures the rye with dairy cows during the winter and spring and finds that he gets big returns from an increased milk flow. These are some of the ways in which rye is being utilized to advantage on the stock farms. Another use for rye is for soil protection during the winter. While it is not of value in gathering nitrogen from the air as does crimson clover and vetch, yet it affords a covering to the land during the winter and serves to take up soluble plant food that otherwise might be leached away during mild, open winters. Then, rye can be sown with success much later than any of the legumes. A knowledge of the conditions under which rye can be grown to advantage will be of value to every farmer who is interested in working his land for the greatest profit. A bushel of rye per acre, costing 75 cents to \$1, will produce a heavy cover crop sown as late as November 1st in latitudes south of Philadelphia.

The First Steps in Selecting Seed Corn

In a short time the standing corn will be mature enough to examine for seed selection purposes. Undoubtedly the best way to select the best seed ears is to gather them in the field. After corn is husked it is impossible to determine under what conditions the plant grew that bore the ear. It may be that many of the larger ears chosen came from stalks that had extra favorable condi-

tions in the field, such as thinness of stand, or came from a spot that was unusually fertile. The seed ears should be gathered from that portion of the field where the land is uniformly fertile and where the stand is best. Where the corn is in hills and the stand is regular, the increased size of a particular ear is probably due to an inherited tendency rather than to especially favorable surroundings. For these reasons the ears chosen for seed should come from that portion of the field that represents most nearly ideal conditions of crop development. The ears selected should be well covered with husks at the top, yet avoid snout or tapering ears. The general shape of the ear can be very well determined by grasping the husk lightly around the ear. Select as large ears as is consistent with the variety. The yield of the crop is largely determined by the size of the ears. A little experience will soon give one an idea of the shape and quality of the ear as it is borne on the stalk.

It will not be practicable to examine fully the ears at this time, as they will hardly be mature enough for husking, but by going through the field one has the opportunity of noting the size and characteristics of the mother stalks. No ears should be taken for seed that are borne too high or too low on the stalk. Nor should ears be taken from stalks that are abnormal in any way. These are points that can be noted only when the corn is standing. I prefer to make the general selection of ears while the stalk is still rather green, when the husk is just beginning to dry. As it is not possible to remove the husk for full examination of the ear under these conditions the stalk should be marked by tying around it just above the ear a bright colored bit of cloth. I have found that red bunting torn in strips about an inch wide and a foot long answers the purpose admirably. The stalks thus marked may be cut separately at the time of harvesting the general crop, or may be included and shocked together. As the husking proceeds later the ears from the marked stalks may be kept separate. Under such a plan of selection one should mark two or three times as many ears as are required for seed, as closer inspection may show that some are off type. The ears, after husking, should be placed in a dry, well ventilated room.

The chief merit of this method of seed corn selection is that it enables the grower to examine the stalk from which the seed ear comes, and also to note whether the ear is the result of a tendency toward high yield or is the product of a particularly favorable environment. A later article will discuss methods of handling the seed.

Queries Answered

Lime.—R. H., Pennsylvania, writes: "Please give me information about lime. What is the difference between burnt lime and what is called hydrated lime? Which will give the best effect and what is the cost per ton and value per ton, and how much should be put on per acre to have equal effect?"

Burnt lime is the most concentrated form of calcium for sweetening the soil. Hydrated lime is less concentrated, while ground limestone (unburned) is about half as effective, pound for pound, for sweetening the soil as the quick or freshly burned lime. Burnt and hydrated lime are caustic, while ground limestone is not. All three forms will correct soil acidity. Where one ton of burnt lime is ordinarily used it will require two tons of ground limestone (un-

burned) and 1½ tons of hydrated to give the same results. Hydrated lime is the most expensive form of lime on the market, burnt lump lime next, and ground limestone, unburned, the lowest in price. The latter two forms are ready to spread at once, while the lump burnt lime must be slaked and then spread. The freight and hauling charges, as well as the ease of spreading, must be considered in buying any form of lime. The results from each form are identical in the end if the proper amounts are used.

Tankage.—C. S., Pennsylvania, writes: "Is tankage a good fertilizer for fall seedling for grass and grain? I can buy tankage analyzing 6 and 20 for \$27, and a chemical brand 3 and 10 for \$30. I thought the tankage would be cheapest, as it contains twice the amount of ammonia and phosphoric acid."

The tankage should prove the more valuable fertilizer if the ammonia is not in a form that comes available too slowly. Some carriers of ammonia decompose so slowly in the soil that the benefit is not appreciable. Good tankage may be used with fair success on fall seeded crops, although warm weather is required to bring out the best results with this carrier of ammonia.

Mowing Out Stubble.—R. F. C., Pennsylvania, writes: "Would you advise mowing out stubble which has been seeded to timothy and clover? The stubble and grass are about 8 to 10 inches high. I would like to know whether it will do more good cut off or left standing?"

There is much difference of opinion as to the value of leaving the stubble and grass stand over winter. Many prefer to cut the land over late in the summer, and if the growth is rather thick rake it up and remove from the field. A heavy growth left lying on the ground will sometimes smother out the clover beneath. I should advise cutting the stubble.

Eradicating Goose Grass.—A. E. G., Virginia, writes: "Will you kindly name the enclosed grass and tell me how to fight it best on a lawn? I find that digging seems to open the way for weeds. The grass is very hard to pull and is killing out the blue grass on the lawn."

The specimen of grass is Eleusine indica or goose grass. The only practical method of eradicating the grass is to cut it close into the ground or pull it up before it goes to seed. New grass seed should be scattered where the goose grass has been removed. Persistence and a little hard work will keep the grass in check.

Winter Oats

A. J. LEGG.

Winter oats is a crop that is usually regarded as being confined to the extreme Southern states; however, they can be grown much farther north than is generally supposed. Wherever they can be successfully grown they are a much surer crop than the spring varieties. Here, in central West Virginia, 1500 feet above sea level, we have been growing winter oats for more than twenty-five years. Spring oats are a very uncertain crop here. They often fail to fill well and if the early season is very dry the straw may be very short. Not so with winter oats; the straw is always tall and the heads well filled with plump grains. The trouble with the winter oats is that they may freeze out during the winter and be very thin, but if sown early in the fall with a light application of fertilizer they are pretty sure to stand the winter well and they have the habit of tillering so well that they thicken up during the early spring. I have counted as many as 40 well developed heads come from a single grain of seed. The latter part of August is not too early to sow winter oats, though the prospects are good for September sowing to make a crop. Last year my brother grew a good crop from a sowing on corn stubble about October 1st. This sowing averaged about 25 bushels of oats per acre that weighed 40 pounds to the measured bushel.

We grow the Virginia Gray or Turf oats. An acid phosphate, 16 per cent. grade, is used at the rate of 150 to 200 pounds per acre. It is best to put the oats and fertilizer in with a common

Winter Wheat

sown late to escape the Hessian Fly, must have the aid of extraordinary, quick-acting, ammonia fertilizer to insure sufficient root growth to meet the winter safely. Let

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be your fertilizer for this purpose. With its double amount of 4 per cent quick available ammonia, nitrogen, and 17 per cent of phosphoric acid you cannot secure a better agent for this necessary forcing of your crop this fall. It has met every test successfully. No other fertilizer so enriches the soil or improves weak, impoverished land, assuring always a better crop than the year before.

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Seed Wheat

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grain drill and I think it best to run the drill so that the prevailing winter winds will blow across the furrows, rather than parallel with them. In this way snow will lodge in the small furrows made by the drill and protect the plants even when the snow is very light. While I would not recommend winter oats where spring oats are a reasonably sure crop, I think that they are worthy of a trial wherever it is too warm to grow spring oats successfully. One advantage of winter oats is that they afford a cover crop, which prevents the waste of available plant food in the soil during the winter. Here in this locality the mercury gets down 10 to 12 degrees below zero sometimes during the winter; however, the ground is usually covered with snow during the coldest part of the year. West Virginia.

Shall We Use Lime?

RUSSEL L. SHELLY.

There is perhaps no farming practice concerning which there are so many diverse opinions as that of liming. It is not unusual to find in the same locality farmers who attribute much of their success in producing profitable crops to the use of lime, and those who claim they receive no benefits whatever.

And it is rare to find a neighborhood where liming is persistently and systematically followed by the growers in that community. The same is not true of commercial fertilizers, as they are almost universally used in certain well defined territories. If lime corrects soil conditions, as we know it does, thus making for better crops, why is it not used more regularly? There are probably several reasons why lime is used by one farmer and discredited by his neighbor. In the first place, there are but few farms in the East where lime has not been used to some extent, some time in the past. Often the liming was done under conditions which did not favor immediate or noticeable results on the crop. In many cases, from this one unsuccessful trial, it was decided that liming was a useless and expensive method of improving the soil. Then again, lime may have been used for several years, but applied in a manner and at a place in the rotation where results have not been possible, owing to soil conditions. The lime in such cases has been applied as a fertilizer, the farmer expecting results such as might be expected from commercial plant food. Lime, as we know, is not a fertilizer and, therefore, cannot be used as such. The function of lime is to correct soil acidity and improve conditions of the soil so that plant food may become available more rapidly. Liming, green manuring, and crop rotation go hand in hand. To use lime without turning under from time to time, an adequate quantity of organic matter is to invite disaster eventually, as the presence of lime in the soil hastens the decomposition and reduction of the organic matter already present, thus rapidly lessening the nitrogen supply of the soil, together with the vegetable matter which are so essential in keeping the soil in prime physical condition. Farms have come under my observation where little or even no regard has been given to the place in the rotation where lime should be applied. Since lime is to assist in breaking down the organic matter in the soil and to keep the soil sweet, it seems best to apply the lime to the land just after a sod or green manure crop has been plowed under. Some balance must be maintained between liming and the addition of organic matter to the soil if the best results are to be obtained. To apply lime to fallow or stubble land which is already somewhat de-

ficient in organic matter will not generally increase the yield of the cereal crops. Whether lime will increase the yield of corn directly even though the crop is grown on sod land, cannot always be answered positively. Yet it has been well demonstrated that the use of lime will greatly benefit the clover which, because of the more thrifty growth, will produce a better sod, which in turn will increase the corn crop. With the exception of the clover crop it is quite likely that the beneficial effects of lime are indirect on the other crops. Liming in connection with a systematic crop rotation, including green manure crops, is the logical practice. There is no doubt that practically all of our Eastern soils need lime, and need it badly. The use of lime once in five or six years is not sufficient, as the humid climate with open winters and heavy rainfall soon dissolve away and carry down the lime into the subsoil, leaving the top soil in its original condition. Lime should be applied at least once in every four years. If difficulty is experienced in getting a stand of Red clover it would be well to apply lime to the land before the wheat is sown, thus giving the clover the benefit of the newly applied lime. Pennsylvania.

Experiment Station Tests Wheat Varieties

From twenty to thirty wheat varieties are being tested each year by The Pennsylvania State College School of Agriculture and Experiment Station. Included in the list are the best old standard varieties and new varieties which appear from time to time on the market.

Only careful trials covering a period of years can be depended upon. Twenty-four varieties have been grown continuously by the Station for the last six years. These varieties and their average yields in bushels are as follows:

Dawson's Golden Chaff, 33.4; Turkish Amber, 30.7; Currell's Prolific, 30.6; Harvest King, 30.5; China, 30.4; Reliable, 30.4; Fulcaster, 30.3; St. Louis Grand Prize, 30.3; Poole, 30.2; Mealy, 30.2; Nigger, 30; Red Wave, 30; Councilman, 29.8; Deltz Longberry Red, 29.6; Ontario Wonder, 29.6; Wyandotte Red, 29.4; Beechwood Hybrid, 29.1; Rochester Red, 29; Fultz, 28.9; Forty Fold or Gold Coin, 28.5; Jones Longberry No. 1, 28.4; Fultz-Mediterranean, 27.2; Eclipse, 26.9; Gypsy, 25.8.

Forecasting Frost

The first killing frosts of early autumn sometimes follow a cold, northwestern storm. However, according to the extension specialist in market gardening of the New Jersey State Agricultural College, the first killing frosts most frequently come on clear, cloudless, quiet nights, which often occur when the moon is full.

All the earth's heat comes from the sun during the day and is given off during the night. The air with the moisture contained in it, acts as a blanket for the earth. Without this we would scorch to death during the day and freeze during the night. Therefore, when the air is full of moisture or it is cloudy, the earth's blanket is most effective in maintaining a warm, even temperature.

The specialist warns all growers of perishable products to be on their guard at the approach of the full-moon nights in September, and especially in October. A southwesterly wind may be followed on the next day by a brisk, dry breeze from the northwest. At evening just as the full moon comes up, the air will become quiet and perfectly clear, furnishing ideal conditions for frost.

Are You One of the Losers?



Low Corn King Low Cloverleaf

SOMETIMES Americans wonder why they get only about half the crop yields from an acre that are produced in other countries. Well, here's one reason—a large majority of the farmers in this country own no manure spreader. One corn belt state lost \$20,000,000 last year by the wasting and poor handling of manure. Are you one of the farmers who shared in this loss? If you are, you need an IHC manure spreader.

International Harvester spreaders, Low Corn King and Low Cloverleaf—besides being low, strong, durable, simple in operation and apron mechanism, with good traction, light draft, and plenty of clearance—have a really successful wide-spreading device. Low Corn King and Low Cloverleaf spreaders are low for easy loading and narrow for easy handling in yard, stable or field. From a box 45 inches wide either of these spreaders covers an even strip of ground 8 feet wide, or better. It saves time and labor, and keeps wheels and horses well away from the slippery manure already spread.

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OUR EXPERIENCE POOL

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Topic No. 1204, Occ.—How shall we light the farm home? Our farm home needs light for the winter evenings, but the little lamps of the present are a problem and solved it in their own homes; we want the experience of such for our home. Tell us of the best way of securing improved lighting. Tell us your experience with the use of kerosene, gasoline or improved oil lighting systems, with cost data and results obtained. Limit 100 words.

Topic No. 12905, Oct. 10.—Reclaiming Waste Land. There is a movement on foot to encourage farm boys in the reclaiming of waste farm land, in which The Practical Farmer is joining by offering prizes for descriptive manuscripts showing the details of the actual work (page 338 of this issue). In order that the boys may have the benefit of the experience of their elders in

Mrs. S. E., Naruna, Va.—My husband's hobby is bees. Being a lover of bees and their friend, both he and his friends, the bees, extract "sweetness from the flower," and the profit comes to him in the form of delicious honey which sells at a profit, besides supplying

Topic No. 1203.—Nearly Every Farmer Has Some "Hobby" or "Side Line" in Which He Finds Profit and Pleasure, or Which He Expects to Make Profitable. What Unusual Thing of This Kind Are You Doing?

R. B. R., Ozark, Ill.—My main side line, and it has developed to be my hobby, is the raising of fish. I have a large pond which I built several years ago, to supply irrigation water for a large garden. It occurred to me to put

some fish in it and raise fish to use at home. I caught several of different kinds in the nearby creeks, and got a few from the Government hatcheries, and after three years, to my surprise I have had an enormous amount of fish. My son has been getting some very large fish already, and they sell well. I never

"Sourwood honey" is rated the best honey in our section, this being a pure white, light cream, combed, transparent product with a delicate, lightful flavor from the white blossoms of the sourwood or whistletree tree. It grows wild here, but is worth cultivating, in my opinion, for the reason that the blossoms hold so much sweet liquid.

do the same thing, at least to supply the table of the family with fish? There are few people that do not love fish, and they are healthful. From just accidentally getting into the fish business, and the experience I have had so far, I am highly pleased, and expect to make some good money in the future out of them.

G. F. S., Delaware.—My hobby "family horticulture." I aim to have a ample supply, as far as possible, all the year, of all the usual, and many rare fruits, nuts, etc., for home use—and some for neighbors. My motto "Quality and variety." To illustrate:

A. E. G., Buchanan, Va.—Some years ago we bought some gladiolus bulbs of the new improved varieties, from which we and our friends have derived so much pleasure that we decided to grow the plants for sale, as the corms multiply so rapidly in our soil with is particularly well adapted to growing root crops.

We plant the 3-year-old bulbs in 3-pound tomato cans and set the cans in the ground so that the tops are about 2 inches below the surface. By applying manure water a few times the plants are kept growing and produce beautiful spikes of bloom. When the flowers begin to open the cans may be lifted without disturbing the roots, covered with paper

and sent to market along with vegetables and poultry products. The customer may set the cans in flower beds or not, as she likes, but the flowers are a pleasure at once and she still has the buds for autumn plantings.

In succession the season is prolonged and the market not oversupplied at once.

Studying and caring for these give great pleasure; fruit is health giving. Those sharing with us are thankful, and at times financial profit is added, as have the soldiers, reaching at twelve hours, finer, yellow varieties, the long one of the former in market, a October varieties at three times the price of Elbertas.

Mrs. S. M. J., Kentwood, La.—Our best side line is peanut butter. This is an article which almost every one likes, and we sell a great deal at home. We raise our own nuts, which we pick and store in barrels secure from rats and mice. The nuts are first shelled, then parched a light brown in a slow oven; while still hot the husks are rubbed off, winnowed and ground to a paste in the food chopper, using the nut butter grinder. To each pound of nuts I allow one pound of sugar, and mix with a half pound in well. The butter is packed in 8-ounce jelly tumblers, which are one-half pound, covered with waxed paper and the lids pressed on. I deliver to the customers twice a week, when I am going to the market.

P. R. S., Wellsburg, W. Va.—We have tried gathering weeds and herbs to sell in fields to sell, but the manufacturers and drug dealers, but they require care in drying for the market, well as lots of shed room, as they are worthless dried in the sun. In the spring we make maple syrup, as there is much pleasure and fun in making money in the work, but it only lasts for a short season. We have made over \$500 worth of cotton candy from the cotton candy machines as the side line to small chain farm, but the incessant and rapid machine sewing is too hard on the wife. The work I have not carried none of the above objection.

Miss Fannie F. Cooper, of the home economics department of the New Jersey State Agricultural College, states that the canning club girls of New Jersey are having as great success in the canning of corn as they have had in canning the earlier vegetables. They are being helped in this work by the method of canning and the quality of corn used. They have adopted the method of "Straight from the Stalk to the Can," that is, the corn is always canned on the same day on which it is gathered.

In canning corn only the corn which is approaching the "roasting ear" stage is used. The corn is husked, the silk removed, then put into a cheesecloth and plunged into boiling water. The water is brought to the boiling point again and

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7019.—Ladies' waist. Cut in sizes 34 to 42 inches bust measure. Long or short sleeves may be used.

7020.—Girls' dress. Cut in sizes 6, 8, 10 and 12 years. This dress has a high collar and the plaited skirt buttons on to fit.

7021.—Misses' dress. Cut in sizes 14, 16, 18 and 20 years. This dress has a raised gored skirt attached to an overbust and a separate full skirt.

7022.—Russian blouse dress. Cut in sizes 8, 10, 12 and 14 years. This dress consists of a separate blouse and a plaited skirt cut to fit.

7023.—Ladies' dress. Cut in sizes 36 to 42 inches bust measure. Collar and vest are in one piece and cut to fit.

7024.—Ladies' shirtwaist. Cut in sizes 34 to 42 inches bust measure. This waist has shoulder straps and a low neck finished with a pretty collar.

7025.—Ladies' apron. Cut in one size. Linen, gingham or lawn can be used to make this apron.

7026.—Ladies' skirt. Cut in sizes 24, 26, 28, 30, 32, 34 and 36 inches waist measure. The skirt is cut in three gores and has a slightly raised waist.

7027.—Children's rompers. Cut in sizes 4 and 6 years. Front of drawers and waist cut to fit.

7028.—Ladies' skirt. Cut in sizes 22 to 36 inches waist measure. The skirt is cut

The Women's Exchange

This is the farm women's own department—for them and by them. It is devoted to the discussion of topics of everyday interest to the women of the farm family. The Practical Farmer invites—**and expects**—you not only to write your experiences on the topics under discussion but also to propose topics for future discussions. The best letter published herein each issue will be awarded a prize of one dollar, and for each other letter published we will pay fifty cents. Address

WOMEN'S DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

OCTOBER 1.—Heating the farm home. How do you heat your home? What in your experience is the best method, what have been your successes and failures in trying to accomplish better results in heating, what has it cost and what are your recommendations to farmers and their wives who are seeking good heat at a moderate cost and a minimum of labor. Limit your manuscript to 200 words.

OCTOBER 15.—What has been your experience with kitchen cabinets? Have they any disadvantages to offset their advantages as labor savers? If you are using a home-made substitute of any kind, tell us about it.

Get your contribution in early. If it does not reach us at least 15 days before the date of issue, it will be too late.

Tell Us All About Your Favorite Pickle—Either Sweet or Sour—and How You Make it.

K. S. W., Tuscarora, N. Y.—Sliced cucumber pickles are our favorite, made as follows: 3 small onions, 1 green pepper, 1 cupful horseradish, 1 cupful salt, 1 quart of vinegar, 1 cupful of sugar, 1 teaspoonful of white mustard seed, 1 teaspoonful of turmeric. Slice cucumbers and onions, chop pepper and horseradish; sprinkle with salt and let stand three hours, drain. Put into vinegar with remaining ingredients and bring to a boil. Place in jars and seal. These are fine.

Mrs. D. L. T., Fine Creek Mills, Va.—Our favorite is sweet pickled peaches. In making this pickle, which grows richer with age, use 3 pounds of fruit to a pound of sugar and a pint of vinegar, and spices to suit the taste. After peeling the peaches put them into a granite-ware kettle with the sugar, vinegar and spices; mix them thoroughly together, cover closely and let them stand 24 hours, then boil for a short time—not long enough for the fruit to break. While hot put into glass jars and seal. I use cinnamon and mace in making this pickle. Use whole, not ground spices.

Mrs. A. S., Canistota, N. Y.—My favorite pickle is pepper hash. Take 12 large green and 12 red peppers, chopped after removing seeds, 15 large white onions, chopped, pour boiling water over all and let stand 15 minutes; repeat hot water process; add 1 quart vinegar, ½ cupful sugar, 3 scant tablespoonfuls salt; boil 15 minutes and seal. This is not only a delicious pickle, but makes a very pretty garnish with cold meat, or a little added to salad, which we find acceptable at a season when garnishes are scarce.

Mrs. L. M., Westover, Md.—Here is my very best sweet pickle receipt, which we all think is delicious: 2 quarts ripe tomatoes (after being chopped), 2 quarts green tomatoes (after being chopped), 1 dozen medium sized onions, 3 red peppers, 1 large head of cabbage. Chop all ingredients fine, add ½ cupful of salt, mix well and drain; add 1 quart vinegar, ½ cupful yellow mustard seed, 1 tablespoonful celery seed, 1½ pounds brown sugar; boil slowly for one-half hour and seal.

Miss M. S., Hepburnville, Pa.—Our favorite pickle, and one that is famous among our friends, is a chow-chow made as follows: 1 peck green tomatoes, 2 large heads of cabbage, 1 dozen red and green mangoes, 15 onions. Soak overnight in salt water; the next day drain and add ½ ounce turmeric, 2 ounces mustard seed, 1 ounce celery seed, 1 package mixed spice, 3 pounds sugar, 6 quarts vinegar, 1 handful of salt; boil 15 minutes and seal.

Mrs. N. G., South New Berlin, N. Y.—Following is our favorite pickle receipt. It is very good indeed:

SWEET MIXED PICKLE.—1 dozen small cucumbers, 1 quart small onions, 1 pint lima beans, 1 pint string beans, 1 quart tomatoes, cut up, 2 chopped carrots, 2 heads celery, 2 cauliflower. Sprinkle with enough salt to make a weak brine and cover with cold water. Let stand in this 24 hours; then place on the range and let come to a boil in this water, then lift into a colander and let drain. Some

people prefer to let all the vegetables cook together, but I find it best to boil them separately, since some cook tender sooner than others, and they should not be allowed to fall to pieces. Arrange nicely in pint jars. Put into a granite kettle 3 quarts of good vinegar and bring to a boil, then add 3 cupfuls of sugar, 3 teaspoonfuls celery salt and ½ ounce of turmeric mixed together. Let all boil up together again and then pour over the pickles in the jars and put on the lids.

Mrs. M. B. M., Pine Bush, N. Y.—A fine receipt for cucumber pickles which will keep for years, is the following: To each 100 medium size cucumbers add a pint of salt and pour on boiling water sufficient to cover the whole; cover tightly and let stand 24 hours; then they are taken out, wiped, being careful not to break the skin, and packed in the jar. Boiling vinegar is then poured over them to cover, and if spice is added let it boil up with the vinegar. Close the jar tight and in two weeks delicious, hard, green pickles are produced—as green as the day they were on the vines.

For flavoring I use an onion sliced, a few cloves, some stick cinnamon, a little white mustard seed and two or three hot peppers. Use good, strong vinegar and put an old plate on pickles, weighted down with a stone. If one does not have 100 at one time, use same proportions and when pickles are cold transfer to a large or permanent jar. Many friends have said, after trying this way, it was so easy and a most excellent way to do.

Mrs. P. P., Beaver Dams, N. Y.—The following is my favorite pickle receipt. I have made and eaten many different kinds of pickles, but I never found any to compare with this.

SLICED PICKLED CUCUMBERS.—Take 9 quarts of cucumbers of the size for table use, peel and slice, sprinkle with salt, let stand over night; in the morning rinse and drain, then take 1 tablespoonful whole allspice, 1 tablespoonful celery seed, ½ cupful white mustard seed, 1 teaspoonful black pepper, 1 tablespoonful turmeric powder, 2 tablespoonfuls ground mustard, 1 pound brown sugar, 2½ quarts vinegar, not too strong; put all together and heat, then put in cucumbers and heat, but don't boil; can and seal.

Mrs. O. L., Tiadaghton, Pa.—Mustard pickle is a favorite with us, made as follows: 3 quarts vinegar, 3 cupfuls sugar, 4 rounding tablespoonfuls of flour, 3 rounding tablespoonfuls of ground mustard, 1 level tablespoonful turmeric, 1 level teaspoonful salt, 2 quarts of cucumbers, 2 quarts of cauliflower, 2 quarts of onions. Scald vegetables separately in salt and water. Make dressing as follows: Scald vinegar, mix sugar, flour, mustard, turmeric and salt with cold water and add to vinegar. Drain vegetables and add to dressing, cook one-half hour. If not sweet enough add more sugar.

Mrs. H. H., La Grangeville, N. Y.—Our favorite pickle is made as follows: Take 2 quarts chopped cooked beets, 2 quarts chopped raw cabbage, 1 cupful grated horseradish, 1½ cupfuls sugar, 2 tablespoonfuls salt, 2 teaspoonfuls of black pepper; cover all with cold vinegar and can. Excellent, easily prepared, not expensive. This is especially liked to serve at a large gathering—grange dinners, church suppers, etc.

Mrs. A. B. K., Rodman, N. Y.—Here is my receipt for sweet pickle which my sister-in-law thinks is the best she ever ate: Either ripe cucumbers or water-melon rind may be used. Peel, cut in strips and cut out seeds, then soak in salt water overnight. In the morning put to drain, then prepare a syrup as follows: To each quart of vinegar use one pound of sugar, boil and skim. Boil the drained cucumbers until tender and quite transparent. Take out the pickles as they get done, strain the vinegar, put it over the fire with a small muslin bag of spices (cloves, cinnamon and allspice

mixed) and boil two hours. Pour over the pickles, cover and put away. These are very rich, so don't eat too much at a time.

Mrs. C. H., Aspers, Pa.—Pickled peaches are the best ever. Use large, ripe yellow peaches, pare and remove stones, fill the cavities with grated horse radish and a little mustard seed, tie the halves of peaches together with wrapping cord and make hot in the following syrup: 2½ cupfuls sugar and 1 cupful strong vinegar; seal while hot. These are excellent served with a roast.

Mrs. W. G. Y., Ulster Park, N. Y.—Here is what we and our friends consider the best mixed pickle we have ever eaten. It is called French pickles, and is made as follows: 2 ears of corn, 2 carrots, cooked, 2 bunches of celery, 4 quarts of green tomatoes, 1 quart of onions, 1 quart of cucumbers, 1 small

head of cabbage, 2 cauliflowers, 3 red peppers, 3 green peppers. Slice all very fine, let stand in salt water 24 hours, then boil in brine 5 minutes, then drain.

PASTE.—One teaspoonful turmeric powder, 3 teaspoonfuls of dry mustard, 5 cupfuls of sugar, 1 cupful of flour, 2 quarts boiling vinegar, 1 quart water; add some whole cloves and boil all a little with above mixture and seal in glass jars while hot.

Mrs. E. P., Norristown, Pa.—This is my very best pickle. It is easy to prepare and makes very good sandwiches for a change.

CORN SAUCE.—One dozen ears of corn, 1 head of cabbage, 1 pound of sugar, ¼ pound grated mustard, salt, celery seed, mustard seed, vinegar to cover. Boil corn, cut it off cob, cut cabbage fine, boil mustard and vinegar, then mix together and boil slightly. Once tried always tried.

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The Practical Farmer

Live Stock and Dairy Section

EDITED BY W. H. TOMHAVE

Management of the Farm Flock

By W. H. TOMHAVE

This is one of the most important periods in the management of the farm flock if adequate returns are to be obtained. The size and condition of the lamb crop secured in the spring will depend to a large extent upon the safe breeding of all the ewes in the flock. If any of the ewes are not bred, it means that the per cent. of lambs secured from the flock is reduced and the only return from such ewe is the wool which is produced. The successful breeding of all the ewes depends largely upon the proper handling of the flock.

The first consideration is that of having a good ram. He should be a pure-bred of the breed used and should be in strong, vigorous condition at the time of breeding. This does not mean that he should be overly fat, which makes him sluggish and inactive. If the ram has been allowed to run down in condition

for a short time during the evening and in the morning. In order to detect the ewes that are bred, it is a good plan to smear the breast of the ram with lamp black or some other coloring matter and oil. This will mark the rumps of the ewes that have been bred, so that a record can be kept of the exact date when each ewe is bred.

The condition of the ewes is fully as important as the condition of the ram. It is always better to breed the ewes when their systems are building up. This can best be accomplished by what is known as flushing the ewes. This is done by feeding them a grain mixture of some kind a couple of weeks before the breeding season begins. A desirable mixture is one made up of the same grains as suggested for the ram. This, fed at the rate of one-quarter to one-half pound daily, will put the ewes in good condi-

How to Run a Babcock Test

By H. H. DEAN

Professor of Dairy Husbandry, Ontario Agricultural College

The object of this article is to give plain directions for operating a Babcock test to determine the percentage of fat in milk.

REPRESENTATIVE SAMPLE NECESSARY. The first thing is to be sure that the sample to be tested is fairly representative of the milk given by the cow, or sold, or in any other condition. We have known a person to run out to the barn or pasture field, milk a cupful of milk from a cow, then test this to find out the percentage of fat in the cow's milk. Such a test is of no value whatever. Some will save a little at the last of the milking to test. This, too, is valueless.

The correct way is to milk the cow out clean in one vessel, then stir the milk and take an ounce for testing. If possible, do this for at least two, and better, four or six milkings, as a cow's milk

to run out, and when the milk is exactly on the 17.6 c.c. mark, close the upper end with the finger and place the lower end of the pipette in a clean Babcock test bottle, holding the bottle in a slanting position, so that the air in the bottle may escape on the upper side while the milk enters on the lower side. If this is not done, the rush of air from the bottle will carry back some of the milk which is lost and the test will be too low. The milk remaining inside the pipette should be blown into the test bottle, so as to get practically all the milk measured, into the test bottle.

ADDING THE SULPHURIC ACID. If the acid is of proper strength (specific gravity of 1.82 to 1.83), and correct temperature (60 to 70 degrees F.), measure 17.5 c.c. of the acid with the acid measure—not a pipette, as it is al-



A Good Herd of Holsteins and a Group of Substantial Buildings on a New Jersey Institution Farm

during the spring and summer, he should be fed some extra feed two or three weeks before the breeding season begins. It is desirable to have some succulent feed which can best be provided in the form of good rape or some other green pasture. This may be supplemented with grain, using a mixture of equal parts of corn, oats and bran with a small amount of linseed oil meal added to it. This should be fed in such amounts as to increase the ram's condition gradually. It is also desirable to have comfortable shelter where he may be protected from the excessive heat which we often have during the latter part of August and September.

The number of ewes that can be bred to one ram will depend quite largely upon the development of the ram used. A mature ram can be used on a large number of ewes if he is properly fed and not used too heavily during a short period. If a lamb ram is used, it is very seldom desirable to breed more than 20 to 25 ewes to him during the first season. It is not a desirable practice to have the ram with the ewes during the entire day, but a much better plan is to have him put with the flock

for breeding. A new rape pasture or second growth clover will answer the same purpose. The time of beginning the breeding of the ewes will depend somewhat upon the time at which the lambs are to be dropped. The gestation period is about 150 days, which makes it easy to calculate the time that breeding should be started. The breeding season will possibly last for a period of 4 to 6 weeks, as some of the ewes may not be safely bred the first time and must be re-bred. The ewes in the flock should be numbered so that a record can be made of the date of breeding and make sure that none remain unbred.

Lice are liable to be particularly serious on young, growing pigs. The practice at the Pennsylvania State College is to spray the pigs with a light crude oil as often as necessary to keep down both lice and eggs in quarters and pens. Several patent hog oilers on the market have proven of some value. Where these are not practicable the best method is hand spraying or dipping. If a commercial dip solution is used two applications are necessary, one ten days after the first.

will vary considerably from one milking to another in fat content.

If milk from a pail, can or vat is to be tested, it should be thoroughly stirred so as to mix the cream with the milk before taking the sample. To dip some milk from a vessel containing milk which has stood for some time, without stirring or pouring, is useless for testing.

TEMPERATURE OF MILK AND ACID. Many persons running a Babcock test, pay no attention whatever to temperatures of milk, acid and water, whereas temperature is the key to successful and accurate testing. The temperature of the milk and acid should be about 65 degrees F.—not over 70 degrees and not below 60 degrees F. A thermometer should always be used when testing.

After mixing the sample by pouring slowly from one vessel to another five or six times, the pipette should be filled, by sucking the air with the mouth from the inside of the tube. Draw the milk above the 17.6 c.c. mark, about one inch, then quickly place the right forefinger over the end that was in the mouth. This prevents the milk running out at the lower end. Next, slightly tip the finger to allow air in, which causes the milk

ways dangerous to suck sulphuric acid with a pipette. Again hold the test bottle in a slanting position so that the acid will go under the milk and not through it. If testing several samples, add the acid to all before mixing, then mix with a rotary or whirling motion until all the curd disappears and the mixture is a chocolate brown color, when the bottle or bottles should be placed in the centrifuge for whirling.

WHIRLING THE SAMPLE. Whirl an even number of samples and be sure the machine is balanced, otherwise it will run roughly. If necessary, balance the machine with a test bottle containing water. The sample should be whirled at a speed of about 1200 revolutions per minute for five minutes. Then add hot water, at a temperature of 160 to 170 degrees, to each sample so that the fat column is all in the graduated neck of the bottle. Be careful not to have the fat above the marks, nor below them, when the reading is made, as the bottle is accurate only for that part graduated. The sample should be whirled again for two minutes. If troubled with cloudy or black readings, add water up to the bottom of the neck, whirl for a

minute or two, then add the remainder of the water required and whirl again for two minutes. This tends to give clear readings. The next step is to place the test bottle in a hot water bath, which is at a temperature of about 140 degrees F. This is a very important part of the testing operation which is frequently neglected and in consequence the fat is too cold, clings to the side of the bottle and cannot be read accurately.

MAKING THE READING.

After standing in the hot water bath for about five minutes, read the liquid fat from the highest to the lowest limits of the fat, preferably using a compass, though the reading can be made by counting—first the large spaces covered by the fat, each of which represents 1 per cent. fat; then the small spaces, each of which means two-tenths of 1 per cent. Therefore, if we find that the column of fat extends over three large spaces and four small ones, the reading is 3.8, or three and eight-tenths per cent. fat. Sometimes the column of fat will cover half of one small space on the graduated neck of the bottle; this is read as one-tenth of one per cent. fat.

WASHING THE TEST BOTTLE.

Many of the test bottles found on farms are coated on the inside with grease. This is caused by rinsing with cold water and not using an alkali, such as washing soda, which "cuts the grease." As soon as the bottle is read, it should be emptied while still hot, be rinsed with hot water, then with hot water and soda, and again with clean hot water. The bottles and the pipette should be kept clean and free from dust.

TESTING SKIM MILK, BUTTER MILK AND CREAM.

Both skim milk and butter milk may be tested for fat with the Babcock test, and also cream. However, special bottles are needed for these. For testing cream it is best to use a fine balance and weigh either 9 or 18 grams of cream into a special cream test bottle. If the cream tests between 20 and 30 per cent. fat, fairly accurate results may be got by using an 18 c.c. pipette for measuring the sample of cream, instead of weighing. When buying a pipette it is a good plan to get one with both 17.6 and 18 c.c. marks, then it may be used for both milk and cream testing. Accuracy and carefulness in measurements and temperatures are the main things necessary in testing milk and cream.

Making Fall Pigs Profitable

W. A. GRAHAM.

Contrary to the general belief that early fall pigs are not so profitable as those coming in the spring, my experience gives me the assurance that if fall pigs are rightly handled from birth to maturity they make the farmer more money than those farrowed during the springtime. The main reason is that less actual grain is required for the fall pigs than for those born in the spring. The most of the growth of fall pigs is, or can be, made from corn ensilage, finely cut clover or alfalfa reinforced with corn meal, bran and middlings, during the winter season, and from rye pasture, clover and rape during the spring and summer. Fall pigs should be large and well fattened for about the June market, but no large amount of corn or other grain need be fed them until the last two months they are kept. They make the greatest amount of their growth from the coarser and cheaper foods. Spring pigs, if pushed for the fall market, must of a necessity get both their growth and final fattening from rich slop and grain. I could never get the spring pigs on high feed, to eat much grass or pasturage of any kind.

For the real profitable results from fall pigs, a few things must have the very best of attention, viz., good stock, liberal feeding of the mothers while the pigs are nursing, and of the little pigs after they are weaned, separate beds, dry but well ventilated, all winter for each litter, and a feeding floor or place well protected from all bad weather.

I find there is no better food for the mothers while the pigs nurse than a rich, thick slop made from pure ground rye. This gives a big flow of rich milk, and especially if some ear corn is also given. The pigs get to eating freely of the rye slop before they are weaned, and that and a little corn should be their main feed until real cold weather comes. Perhaps the middle of December is about the right time to quit the use of the rye slop, but still give some corn, and allow the herd to have all the ensilage made from corn they will clean up twice a day. The silo fully solves the problem of both a bulky and a good growing food for wintering the hogs. Some corn is necessary, but no great amount.

Sow rye for an early green feed, and turn from that to clover or rape as soon as they can be had. As soon as the rape or clover pasture is turned on, begin the feeding of corn very liberally. Try this for actual cheapness in pork production.

My First Silo—A Reminiscence

R. B. RUSHING.

It was a lively young salesman hanging around, who caused me to first order the thing, and I ordered it partly to get rid of him. There wasn't another silo anywhere in the neighborhood. Nannie was aghast at what I had done. "I was getting reckless," she said. "I never said much, for I had been reading a little about the things and it looked like the saving of work to feed silage. It appeared to me as if the feed would go further."

When the thing came and I got it all stacked up in the barnyard of course the neighbors all heard of it. It caused no end of talk, for I had a reputation of being pretty shy about buying any new-fangled things. It took me several weeks to get used to seeing the thing after it was erected, standing up so straight, 28 feet high, and looking down on the rest of the buildings.

When it came time to fill the silo several of the neighbors came to help. We didn't get it filled the first day, as things did not go well, and it began to look as though all my corn was going to be swallowed up by the thing, but I pretended that that was as I had expected. It took an hour and a half the next day to finish filling it.

After the force had all gone I looked around to see where I was at and discovered that the silo had canned up five-sixths of my corn crop. Well, as I still had a few nubbins left for a kind of a variety and treat for the horses occasionally, I felt relieved. Only it made me feel queer to notice how much that silage settled inside of a week. I could not see where all that corn went to. The settling caused a shortage of at least 2½ feet at the top of the silo.

It was several weeks before it came time to open the silo and start feeding. Nannie was as anxious to see what the stuff was like as I was. So the evening I got the stock all in their stalls and prepared to climb up to the doors of the silo she had to go up with me to satisfy her own curiosity. We walked around over the silage and found to our surprise that the stuff was all rotten. We dug down into the top and it was all hot and moldy. Nannie didn't even look at me. She knew how I felt about it.

However, we scraped off the moldy top and soon the silage began to improve in looks, but it was smelling sour. I finally summoned nerve to throw down enough for a ration for each animal, and then we both climbed down to see how well they liked it. Each horse and cow mused over its share and would not eat it. Several of them looked up at us and bawled for their old-fashioned bundles of fodder. There was none for them, so we went into the house and tried to forget about it for a night. I put in a bad night. Nannie asked me several times when I was turning from side to side of the bed, trying to find a softer place: "Robert, what's the matter?" I did not have an answer for her; she knew the reason without me telling her. Let any man put his corn crop up in a big can so that it sours and his stock refuses to eat it and there will be reason enough to lose sleep.

The next morning when I went to the barn the silage was all cleaned up and the mangers looked as if the cows and horses had licked half the night. When they were given their morning's feed they went right at it. Things looked bright after that. In the course of a few days it became a pleasure to measure out the silage to them and watch them as they rushed into the barn, each cow and horse to its own stall for fear some other would be at its feed.

The pleasure never has grown old. And the animals' appetites were never more keen. Even the wild heifers, that in pasture usually hold their heads high and run at the first opportunity, pushed the feeder away from their feed boxes before he had half emptied their measure of silage. Soon the gray colt, that I had not given silage to, began to hang around the door of the cow barn, and when I was not watching he would be in one of the cow's stalls before she could head him off. The brood sow seemed to enjoy her ration of a grallon of silage quite as much as the cows. She would hunt through the silage for the grain and then after eating all the grain she would chew up the balance, sucking out the juice, and she seemed to thrive on it.

The wife and myself lose no sleep now over the silo, you may guess.

Sheep as Effective Land Reclaimers

H. A. CRAFTS.

If I were about to attempt the reclamation of one of those abandoned Eastern farms we hear so much about, one of the first things I would do would be to invest in a flock of sheep, for sheep are the most effective reclaimers of worn-out farm land that I know of.

On our Maine farm I saw the whole process. Our first sheep pasture was a piece of rolling valley land nearly in its original state from the stump. It was a piece of land that had never yet seen the plow, but was susceptible of a fair tillage. We let it run to sheep pasture while waiting for the stumps to rot, so they would not obstruct the plow when it should come to breaking-up time.

The land had first been cropped to grain; then to hay, until the grass was badly run out, and the weeds were coming in to take the place of the grass. Some of the stumps had separated and a second growth of trees had started up. Then we turned in the sheep. For them it was a treat. They went for the weeds and undergrowth greedily, so that by the end of the first season they had nearly everything grubbed clean. Of course, after they had browsed off the taller growths they began to get nearer the ground and finally they cleaned that up. Then in the following spring we turned the sheep into the pasture just



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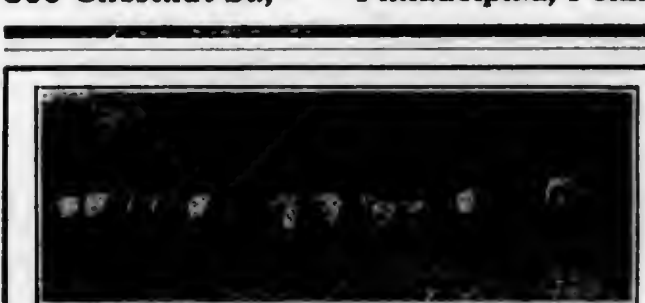
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as soon as the snow was off the ground, and this gave them a great advantage over the weeds and bushes. The new leafage was seized upon by the ruminating animals and was kept closely cropped all the season; and thus a complete control over the wild growth was obtained.

As season succeeded season the weeds disappeared and in their place sprang up some fine grasses, which came in some mysterious manner and secured a permanent foothold. Each year the pasture grew greener and fresher; the weeds disappeared and the stumps rotted. The land had been reclaimed, and also fertilized, for sheep manure is one of the best fertilizers that a farm can produce. It was now time to seek a new pasture for the sheep.

Right adjoining our farm on the west was a steep hillside pasture that had been about the same as abandoned for years. A few cows had been run on it, but it was largely grown up to brakes, poverty weed, bushes, etc., and afforded but little feed that was fit for cows. But we knew that it would be all right for a sheep pasture, so we made a deal for it, trading in on its purchase a piece of woodland for which we had no special use. Then we patched up the fences and turned in the sheep. It was a fine change for them, as they got an entire change of diet, and also of air, the hillside being high and breezy. There was plenty of shade for the sheep and just at the foot of the hill ran a clear brook of living water, which made an ideal drinking place for the animals. The flock did finely.

Then we put six husky oxen to the breaking plow and ripped up and turned over our old sheep pasture. The stumps had rotted and by thorough leveling and harrowing we got the ground into excellent condition for seeding.

Big crops we raised on that old sheep pasture land—300 bushels of potatoes, 75 bushels of oats, 40 bushels of corn or wheat to the acre were samples of our first product from the newly plowed land.

These are things that any one can do, and appear to be not only common sense, but actually scientific. Sheep are bound to be good property on the Eastern farms. The great sheep ranges of the West are breaking up into farms and ranches and Western herds are growing less and smaller.

Breeding and Feeding for Dairy Purposes

(Concluded from page 339)

for a study of the individual needs of each animal being fed. The art of feeding is not easily learned. Men who are thorough masters of the art of feeding are not so plentiful as those who are masterful breeders and I may safely say these are indeed few. As the art of breeding includes the science of breeding, so, too, does the art of feeding include the science of feeding. It must stand as true that however well bred a dairy herd may be it cannot prove profitable unless well fed. And no herd will be well fed unless each cow is supplied with the necessary nutrients in sufficient quantities to meet her individual needs.

I know some farmers and dairymen who feed all their cows alike. They do this for two reasons. One is for the convenience of the feeder, and the other and more binding one is that the idea is nearly universal that what is good for one cow must of necessity be good for all other cows. The first reason might be excusable, but the other is wholly unwarranted. When a cow possesses the

dairy type to a reasonable degree and is not proving profitable there is some good reason for it. In theory the dairy type should mean a good cow; in practice the good cow always has the dairy type. The conformation and the quality should be found together always. When the former exists without the latter it is the fault of some man and cannot be justly charged up against the cow. Either the man who raised her failed so to feed her as to develop her dairy qualities or her owner is not furnishing her the proper kinds and amounts of food. The chances are that her early treatment was faulty. I believe more cows are ruined for dairy purposes before they are two years old than after they come in milk.

There are men who have tried to improve and breed up their herds, only to get helpers that have proved inferior to their mothers. As a result, pure-bred sires have been blamed and pure-bred stock ridiculed, while the use of inferior animals for breeding has been continued. When a well-bred heifer proves unequal to the parent stock it is usually the fault of the breeder and not of the breed. The breeder should shoulder his own mistakes and not blame the sire and dam for his lack of wisdom in feeding and handling. The nerve force must be kept up, the lung capacity made large and the digestion powerful and almost unlimited. Nerves, lungs, stomach and milk—secure the first three with any dairy bred heifer and the last, which is the object for which we work, will not fail.

Sometimes one acts too hastily and condemns a heifer before she has had her chance to prove what she can do. If I had a well built heifer that showed evidence of being a good dairy cow and she failed to do good work the first year I would try her the second time. Full development does not come with the first year. This holds true no matter at what age the heifer is first bred. My best cow has freshened with her third calf and it would take big money to buy her today. As a heifer her first year's work was not satisfactory and many men would no doubt have discarded her. But she came from a good cow and carried in her body the markings of a good dairy animal, so I kept her for another trial. She is now proving the wisdom of that decision. So I say that I believe many heifers are condemned too hastily.

The more uniform the herd the less individual variation. This is a strong argument for a herd of the same breed. If not of the same family, for feeding would thus be simplified and labor saved and profit increased. The breeding and feeding of cows for greater production not only results in better cows and more profit, but the men in charge are made wiser.

Queries Answered

To Make Butter Come More Quickly.
—C. M. Y., Pennsylvania, writes: "We have a good cow that gives from 8 to 10 quarts of milk at a milking and makes from 10 to 12 pounds of butter when in good pasture. We give her mostly summer grass and Colonial middlings, about 4 quarts twice a day. We give her salt regularly. We must churn from one to two hours to get butter. We have no separator, but skim in the old way. Please tell me how to make butter come more quickly."

We note you state you skim by hand. As is often the case in hand skimmed cream, the cream is too thin and has too small a percentage of fat in it to secure a good, uniform churning. Such cream loses too much fat in the butter time for churning. Again, you may not have allowed time for the proper degree of acidity to develop. The cream should taste only very slightly sour. Cream naturally ripened at 70 to 75 degrees will develop this amount of acidity when held for about ten hours. The length of time best for churning varies with the condition of the cream,

but should not require more than 20 to 30 minutes. Cream that requires much longer than 30 minutes may be improperly ripened or abnormal in some way. The temperature at which cream is churned is very important. When the cream has been ripened properly, it should be cooled down to churning temperature and held at that temperature at least two hours to allow the fat to become cool and firm enough to churn. In spring and summer when the cows are fresh and feeds succulent and soft, the proper churning temperature is 52 to 56 degrees. During the winter this should be increased to 56 to 60 degrees.

Indigestion in Rabbits.—K. C. W., Pennsylvania, writes: "My young rabbits eat well and their abdomens become very large, as if they had eaten too much; after a time they become very weak and die. I feed them grass, bran, apples, cabbage and leaves."

The rabbits do not get sufficient exercise and get too much food. Give less food and arrange matters so that they will have freedom in a large lot for a few hours daily. To the sick ones give a teaspoonful of castor oil twice daily until their bowels move freely and add to their drinking water one-quarter of its bulk of lime water.

Dehorning Cattle

It is desirable to dehorn cattle which have not had their horns treated when they were calves. In such cases horns should be removed when the animals are yearlings or two-year-olds.

Most dairymen prefer to destroy the horns when the calves are from a week to ten days old. This is done by moistening the horn buttons and rubbing them with a stick of caustic potash. Only enough of the potash should be applied to destroy the horn button. With a little experience one will be able to judge accurately the amount of potash necessary.

If a number of animals are to be dehorned a chute or stock should be constructed. Horns may be removed by dehorning clippers or by sawing. It is preferable to remove them about one-fourth or one-half inch from the head. A little pine tar may be smeared around the opening after dehorning has been done, to stop bleeding and discourage flies. If severe bleeding occurs, the Pennsylvania State College School of Agriculture and Experiment Station advises placing a piece of absorbent cotton over the horn and applying the pine tar to that.

Dehorned animals should be turned into an open lot away from the barn so that the walls of the barn will not be spattered with blood.

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Reduces Strained, Puffy Ankles, Lymphangitis, Poll Evil, Fistula, Boils, Swellings; Stops Lameness and allays pain. Heals Sores, Cuts, Bruises, Boot Chafes. It is a SAFE ANTISEPTIC AND GERMICIDE.
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Friday, Sept. 29, 1916—1 P. M.

Proven matrons of finest merits, gilts selected for type and quality; carefully culled young stock of both sexes; boars of outstanding individuality and fashionable families. This is a rare opportunity for the farmer or business man in taking his own time and attention. The herd has been collected by Mr. Buckley with the utmost care and attention, both as to breeding and individual quality, and it is seldom that such animals are offered without limit of price. This sale will be a complete dispersal and every animal will be sold. Catalogue on request.
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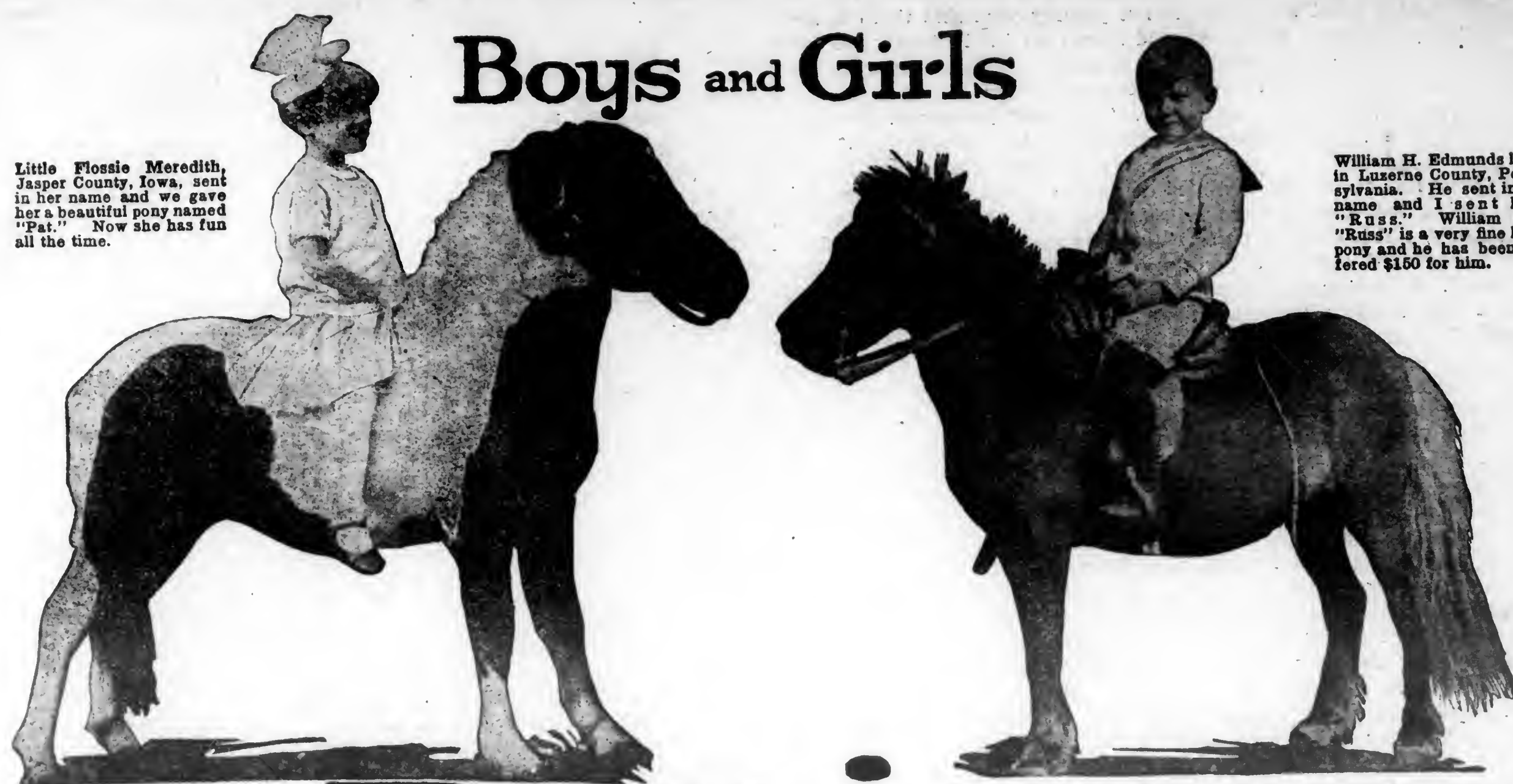
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Boys and Girls

Little Flossie Meredith, Jasper County, Iowa, sent in her name and we gave her a beautiful pony named "Pat." Now she has fun all the time.



William H. Edmunds lives in Luzerne County, Pennsylvania. He sent in his name and I sent him "Russ." William says "Russ" is a very fine little pony and he has been offered \$150 for him.

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Children Don't put off this chance. Don't wait. Write your name and address in the corner below, cut it out and send it to me. I will then send you the beautiful Free Pony Picture Book and you will have an equal chance to receive one of the real live Ponies that I am going to give away soon. You stand just the same chance as any other child, and it doesn't cost you a cent. Get a pencil and write your name now.

Parents Please show this offer to your child, and send in the Coupon. You will be interested in the Free Pony Book I send, and your child will enjoy it immensely and profit by it. I receive many letters from children telling me how they enjoyed reading the book. Besides, your child may win one of the Shetland Ponies I am actually giving away this season. Your child stands the same equal chance as any other child.

Just Sign Your Name

PONY COUPON

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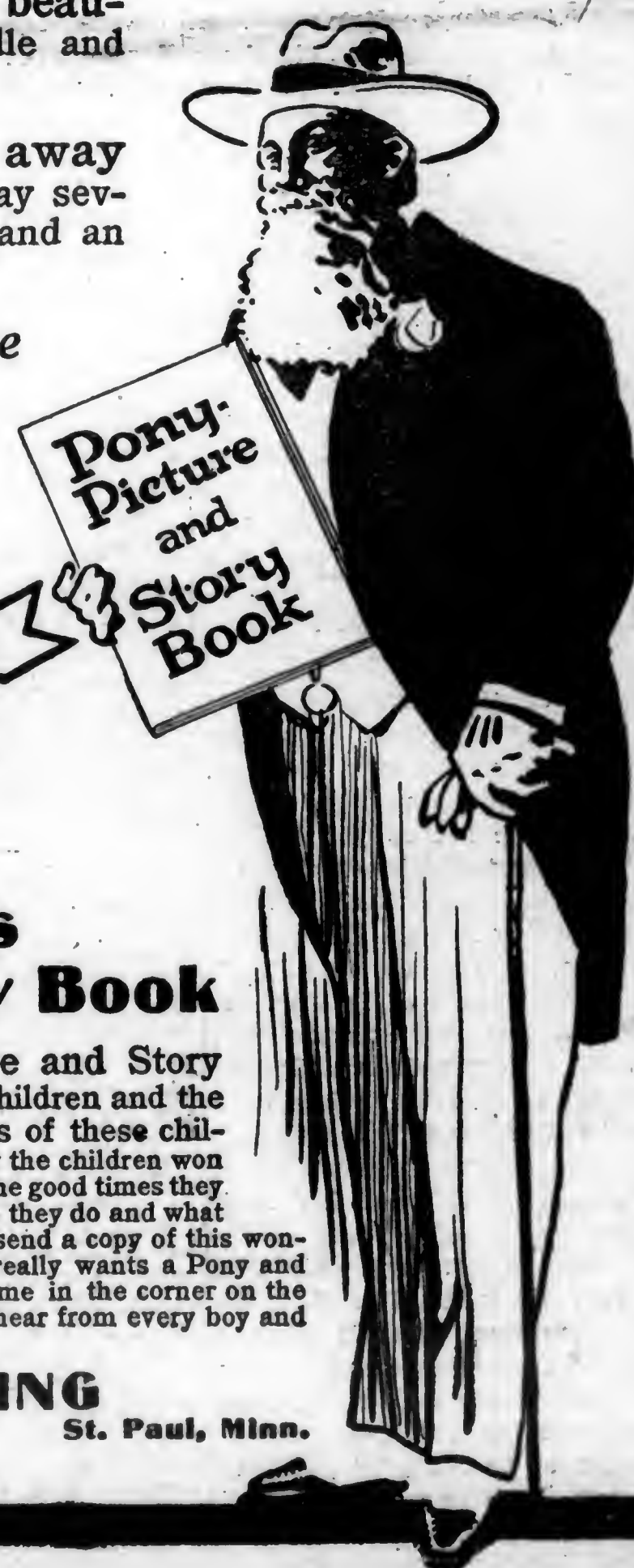
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A TWICE-A-MONTH JOURNAL of practical, every-day experience for, and by, men and women who take their living from the soil.

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The Farm Boys' County Hikes and Camps

By C. W. CLEMMER

MANY farm boys in various counties of Pennsylvania are being afforded opportunities for a new type of education such as has never been available in the past in any organized way. Primarily through the initiative of the County Agricultural Extension Representatives employed in Blair, Mercer, Montgomery, Berks and Chester counties in Pennsylvania, in co-operation with the boys' club office of the Pennsylvania Agricultural Extension Department, the farm boys' hikes and camps have been conducted dur-

ing the month of August. In preparation for these hikes and camps the County Extension Representatives first mapped out desirable routes and determined camp locations which would offer the greatest number of educational advantages. Thus, for example, the route of a boys' hike would be planned to comprise the best farms of a county, as well as some of the poorest, for the sake of contrast, and the maximum number of varied interests selected. The camp sites were also chosen with the same thoughts in

mind, so that the farms surrounding the grounds would offer the best educational opportunities. Otherwise the grounds were also to be suitable for camp usage. Several weeks prior to the hikes and camps the County Extension Representatives went over their courses and explained to the various farmers along the routes, the proposed plans. Without exception the farmers were very willing to extend their hospitality

boys examine their live stock, crops and equipment, and also to tell the boys the high and low points in their experiences on the road to success with their various farming enterprises.

The next step for the County Extension Representatives to take in preparation was to determine a continuous program for the hikes or camps, having something for the boys to see or hear during every hour. The miles traveled from place to place, the times of departures and arrivals at farms, the points of in-



1 A Dairyman Explaining the Use of a Milking Machine
2 Enroute
3 An Alfalfa Study

4 A Hay Mulch to Conserve Moisture in a Young Apple Orchard
5 A Game of Low Ball
6 Rope Splicing Practice

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terest to be observed at the various places, arrangements for meals, the evening camp fire programs and special features along the way were all included in the programs. The menus were also planned in advance and the food supplies purchased ready for the big occasions.

So far as the management was concerned, everything was now in readiness to extend to the eligible young farmers the proposed plans. A letter was then

(Concluded on page 368)

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OCTOBER 1, 1916

For More Sheep in Pennsylvania

In promotion of the movement favoring an increase in the sheep raising industry in Pennsylvania, the Agricultural Extension Service of this state has formulated a "Sheep Project," which is to go into operation at once. What many farmers who might be interested in sheep raising lack, is accurate information as to the facts concerning this industry in their section, and to obtain this information the Extension Representatives in each of the thirty-six counties of Pennsylvania will make a survey of the number of flocks of sheep in their districts, the number of sheep in each flock, the number sold, the amount of wool sold, the cost of maintenance and the profits per flock. We believe that the information thus gathered will be very valuable and will surprise many farmers who are not now raising sheep. The plan is that articles covering the results of these surveys shall be published in the county newspapers and elsewhere, and the information shall be disseminated in every way possible.

An interesting feature of the plan for showing farmers what can and is being done in the way of sheep raising in Pennsylvania, is a series of automobile excursions during the month of October, under the supervision of the Extension Representative in each county to visit farms where sheep are now kept and to hear from the sheep raising farmers themselves the stories of their experiences. We trust many of our farmers will enjoy and profit by these excursions, and that they will be the means of interesting many to the point of going into sheep raising, which at the present price of wool, lamb and mutton should be very profitable in this section.

It is also planned by the factors engaging in this campaign to secure proper dog legislation which shall serve as adequate protection for the farmers' flocks.

We hope the state agricultural authorities in neighboring states will join this movement to raise the sheep industry to the place it ought to occupy in the farming business of this section.

Don't be Stampeded

JUST now there is an unfortunate, though extremely limited, panic among poultry raisers, and at a time when indications point to profits heretofore undreamed of by the most optimistic poultry enthusiast.

Because grain has increased in price a few poultry producers in several sections of the country have taken it for granted that the cost of production will outdistance returns. If this were true there would not then exist any reason for disposing of producing stock; should the poultry producer only break even in the coming season (an almost impossible condition) the stock would at least be as valuable as it is now.

Again the unwisdom of destroying an investment that has required years to build up is obvious. Every

economic arrangement is adjustable to the needs of humanity and the high price of eggs and fowls. To tear down, without justification, the one enterprise on millions of farms throughout this country that produces, in general agriculture, at least one-twelfth of the total farm income is criminal fallacy; eggs at the moment are higher in price than last year at the corresponding moment and the price all edible animal flesh commands has raised the price of poultry products.

It will be impossible to rebuild or restock the poultry plant for the price obtained from the sale of the producer now on hand; it will be impossible to secure, next spring, eggs to rehabilitate the poultry plant at such a price as will be commensurate with the forced sale of mature stock now, standing the loss of egg money all fall, winter, spring and next summer.

Western packers are taking advantage of the unusual situation, buying and storing more poultry than last year, because of the teakettle panics that throw greater quantities their way.

New England States authorities predict an egg shortage for this fall, winter and spring, while investigators in that section predict that eggs will cost the consumer in both Boston and New York markets more than at any time in the past ten years. An egg famine means more than high prices to poultry raisers, especially to those who injudiciously dispose of stock now; scarcity means no early hatches and limited late hatches.

There does not appear to be any reason for this incipient panic.

The Fruits of Organization

THE desirability of co-operation and organization among our farmers has frequently been dwelt upon in the pages of this paper and particularly during recent months have we tried to impress upon our readers the fact that the greatest business success in farming, as in any other industry, can only be accomplished by this means. A concrete example of what has been accomplished in one line of farming, and which can be duplicated in other lines, has come to the Editor's desk in the form of the Annual Report of the California Fruit Growers' Exchange for the year ending August 31, 1916. We wish every one of our thinking farmer readers could go carefully through the pages of this report, but since it is unlikely that many will see it, we think it worth while to call attention to a few of its significant features.

During the year which the report covers, the California Fruit Growers' Exchange has forwarded 12,101,520 boxes of citrus fruit, having a delivered value of approximately \$38,500,000, of which amount it returned to California \$27,703,000; of all this vast amount, losses from bad debts and all other causes totaled only \$102.73. The total average selling cost was less than 6 cents per box of fruit, and in addition there was invested in advertising 2½ cents per box for oranges and 4 cents per box for lemons. The advertising done at this small expense has made the Exchange's brand of fruit famous throughout the whole country and has educated the public to a greatly increased use of oranges and lemons, calling attention to their delicious and healthful qualities and setting forth the advantages which California oranges and lemons have over other similar products; it has also started half the country to drinking orange juice purchased over the counters of drug stores and soda fountains, at restaurants and from stands which have been established by hundreds throughout the cities and resorts of the country. The Exchange has been in existence twenty-one years and today comprises 17 district exchanges, 162 shipping associations, and maintains 77 district sales offices; it is conducted on a non-capital, non-profit, co-operative basis and its membership is about 8,000, that number being about 70 per cent. of the citrus fruit growers of California.

Connected with the Exchange is an organization known as the Fruit Growers' Supply Company, whose annual report shows that during the past year it has done a business of \$4,092,865.97 in packing house and orchard supplies and the like, which it has sold to members at advantageous prices, handling 18,187 orders for its members at an operative cost of less than 86 cents on each \$100 worth of packing house and orchard supplies purchased. The Supply Company has been in existence for seven years and apparently has rendered a very valuable service to the Exchange growers.

As a record of efficiency the service rendered by these two affiliated associations to their members

would be hard to beat, and yet a service equaling, or at least approaching, it could be obtained by the farmers of any state or district in the handling of apples, peaches, grapes, poultry, eggs or any one of many other farm products, if the producing farmers of that state or district would organize and co-operate as thoughtfully and patiently as the citrus fruit growers of California have done. Our Eastern farmers could call to their aid as capable organizers and business men as their California brethren have secured; most of the work of the organization must be left to specialists in this line and to business men who have had experience in handling big movements, but the patience, stick-to-itiveness and loyalty to the organization, once formed, is in the hands of the farmers themselves.

Notice, please, that the California Fruit Growers' Exchange has been in existence 21 years; in its annual report we are told that the Exchange during the last 13 years has returned to California \$192,500,000; compare this aggregate return for 13 years with the returns for the past year, as quoted above, and you will see what the growth must have been from year to year to attain the present figures; no mention is made in the report of the returns for the first eight years of the association's existence, and we can imagine that through those first years much of patience and the "try, try again" spirit was needed to keep the members loyal to their organization. That the members for the most part were loyal is evidenced by this year's report, which is proof sufficient that loyalty and determination bring their own reward.

Bulletin Helps for Farmers

"Important Factors Affecting Machine Milking" is the title of Bulletin No. 166, issued by the South Dakota State College of Agriculture and Mechanic Arts (Brookings, South Dakota), which should interest many of our Eastern farmers. The bulletin tells of experiments conducted with a number of different machines under varying conditions and contains a great deal of information which should be of value to any farmer contemplating the installation of milking machines in his dairy barns. Since the milking machine has proved practical beyond a doubt and has come to stay, the author of this bulletin points out that the same breeding and selection which is necessary to the upbuilding of a herd of the best milk producers tends to make the milking machine more effective. We suggest that farmers interested in this modern dairying improvement write to the college for this bulletin.

In its series of technical bulletins on the construction of farm buildings, the National Lumber Manufacturers' Association has recently published No. 4, "Swine Houses," and No. 5, "Poultry House Construction;" both are by Prof. K. J. T. Ekblaw. Besides much interesting and valuable information as to the essentials for the proper housing of these two kinds of farm stock, these bulletins contain drawings and building directions for both portable and centralized stationary types of swine houses in the one case, and of stationary and portable colony houses, coops, feeders, hoppers and shipping crates for poultry in the other. Either, or both bulletins are offered free on application to the National Lumber Manufacturers' Association, Chicago.

"Waste Land and Wasted Land on Farms" is the subject of a wonderfully interesting and valuable Farmers' Bulletin (No. 745) recently issued by the United States Department of Agriculture, Washington, D. C. After a study of 1,703 farms distributed throughout nine states, the author, James S. Ball, finds that there are certain portions of almost any farm which contribute nothing to the farm income, and in this bulletin he suggests various ways through which more or less of such non-productive land may be reclaimed on the average farm. Boys who are entering the Land Reclamation Contests announced on page 366 of this issue, will find some valuable suggestions in this bulletin, while farm fathers will be likely to obtain some hints from it which will cause them to urge the entry of their boys in the contests mentioned. The bulletin is free on application to the Department.

An interesting bulletin for fruit-growing farmers throughout the East, is one recently issued by the Ohio Agricultural Experiment Station (Wooster, O.), "Orchard Rejuvenation in Southeastern Ohio" (No. 301); while the illustrations and specific instances set forth in this bulletin relate to a definite territory, the improvements suggested and the comparisons drawn should be of value to all Eastern orchardists.

Electricity on the Farm—III

By ALFRED E. WALLER

OPERATING COSTS.

Probably a good many people who read this article will be somewhat disappointed. In those which preceded it, the author announced that he would try to present figures which would give an exact idea of the cost of operating a farm lighting system. Questions which have been asked since the first article appeared show that a great many people think that there is an approximate figure which represents the cost of operat-

ery in two hours, and so forth. If 8 candle power lamps are used instead of 16 candle power, figure that each requires ½ "lamp hour" of energy per hour, and, in computing the motor load, allow about 30 lamp hours per hour for a ½ H. P. motor fully loaded, other sizes in proportion.

It is obvious, therefore, that no price per month will apply as the running cost of more than one outfit. If one man likes to read late, and keeps two or



Electricity on the Farm III—Fig. 1

ing an electric farm equipment, or, rather, of any and all farm lighting systems. This is not the case.

The money which is paid out to keep an electric farm equipment operating is the price paid for electric light and power, or both, on that particular farm. Two men, living side by side, may buy identical equipments, and find after using them for a while that their operating costs do not agree. This does not mean

three lights burning for several hours each night, his light bill will be larger than his neighbor's in the same proportion as the excess of light or power.

For example, let us suppose that Mr. Brown burns 10 lamps each of 8 candle power for one hour each morning and three hours each evening. Each 8 candle power lamp takes ½ lamp hour of energy per hour, so we have ½ lamp hour multiplied by 10 lamps multiplied by



Electricity on the Farm III—Fig. 2

that one outfit is good and the other worthless; investigation will generally show that one man uses more light or power than the other, or that he uses the same number of lights longer each day than does his neighbor.

It is convenient to figure power consumption in "lamp hours." One "lamp hour" is the energy consumed by a single 16 candle power lamp in one hour. One lamp in five hours would need five "lamp hours" of energy. Fifteen lamps would consume 30 "lamp hours" of en-

4 hours, which equals 20 lamp hours per day. Suppose that he has 50 lamp hours per day motor load, additional. This means a total average load of 70 lamp hours per day. If Mr. Smith next door has the same motor load, but uses two 16 candle power lamps more than Mr. Brown he will have 2 lamps multiplied by 4 hours multiplied by 1 lamp hour, which equals 8 lamp hours extra, so that his daily load will be 78 lamp hours, or, in other words, everything else being

(Concluded on page 369)

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THE GARDEN

Edited by W. F. MASSEY
All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

Tomatoes Old and New

The tomato has always been a favorite subject of experiment with me. Starting with the time when I paid the late Colonel Waring \$5 for twenty seeds of the Trophy, the first real development of the modern smooth and solid tomato, I have tested nearly all the new ones brought out every year.

We had smooth tomatoes before the Trophy, but they were, as a rule, with large interior spaces and rather hollow, like the Tilden. The Trophy was the result of getting the old mammoth Chihuahua tomato into a smooth skin. This old Mexican tomato was a very solid inside but a very rough outside, and served to get us the solid inside with a smoother outer skin.

Many breeders have tried their hands on the tomato, but Livingston did more for the improvement of varieties than most other growers, and many of the Livingston tomatoes are among those that have stuck and become standard sorts.

Earliness has been the object with nearly all the growers, while others have aimed at size and solidity. Chalk's Jewel was hailed as the greatest advance in earliness till the Maule's Earliest came out, followed by Earliana, which I never could distinguish in its original form from Maule's Earliest. Both were early and both were inclined to be rough outside. The name of Earliana has adhered to this, and the efforts of all growers have been directed to getting it into a smooth shape. Some have done this pretty effectively, and the Langdon Earliana is now a standard sort and generally gives a crop of smooth tomatoes. This sort has a value for the market gardener in giving its entire crop all at once and early, but it soon fails and in the home garden one will prefer a tomato that continues fruiting longer.

A few years ago the Bonny Best was brought out by the late Mr. Stokes—evidently an earlier selection from Chalk's Jewel. It has gained favor more rapidly than any of the more recent productions. This year my first tomato was pulled June 12th and the same plants were giving good fruits the middle of September, while the Earlianas were done and the plants cleared off by the first of August.

For the main late crop of large and medium sized tomatoes of the red class, Stone is still the standard used by all growers for the canning factories. The advantage of the Stone is that it gives a crop of uniformly good size and smooth, though not perhaps as heavy a cropper as some others.

Maule's Success is unsurpassed for the family garden as a red tomato. The fruits hardly average as large as Stone, but they are of uniform good size and produce a heavier crop than Stone. For those who wish a large tomato the Crimson Cushion is better than the great Ponderosa, as it has a red color and makes more smooth fruits. But if one wishes to make a few big tomatoes for show the Maule's Enormous and the Ponderosa will fill the bill. I do not care greatly for either.

Of pink colored tomatoes the old Livingston Beauty is still as good as any, though the Globe is also fine and a great cropper.

In the South the great drawback to tomato cultivation is the prevalence of

the bacterial blight. Nothing is more discouraging to a gardener than to have a lot of fine plants loaded with green fruit all suddenly collapse and die over night, as I have had them to do in North Carolina.

Years ago I suggested that the Southern experiment stations could do a good work by taking the little round cherry tomato, which seems perfectly resistant to blight and rots, as a starting point for the breeding of a resistant tomato of good size. A Texas grower wrote that he had done this, and sent me seed of what he called the Texas Bell, grown by a Mrs. Bell in that state. I grew these and found them a wonderfully productive tomato with fruits the size of a small biscuit. They are too small in their present state, but will make a fine starting point for the production of a blight-resisting tomato, for this disease has been reported getting



Prof. W. F. Massey—Our "Man with the Hoe"

A host of our readers, who for many years have enjoyed and profited by the writing of Prof. Massey, will be glad to see how he looks today, and will unite with us in wishing him many happy returns of Sept. 30th—which this year is his seventy-seventh birthday.

into the great tomato section of eastern Maryland, and if it spreads as it has in the South, it will be the doom of the canning industry; the stations should take up this matter of breeding resistant sorts. The Bell is perfectly resistant to disease, and keeps sound longer after ripening than any other tomato, for I have kept them a month without rotting. If this disease-resistant character can be bred into a larger tomato it will be of immense value, and the experiment stations are the places where this should be attempted.

The Garden in October

One advantage of the overhead irrigation systems, like the Skinner and Manaway, is that many crops can be saved from the light frosts of the early autumn by keeping the spray of rain going all night, or by washing the hoar frost off from the lettuce and similar plants in the early morning before the sun hits them.

Too many people in the Middle Atlantic coast region assume that the garden is done by October. They are only summer gardeners and do not realize that even in this latitude one can get a great deal from the garden in the late fall and winter. Lettuce plants that were set in September in highly enriched beds should give good lettuce all through

October, for the light frosts do not hurt these plants seriously and not at all if one has the irrigation system over his garden.

Do not be in too great haste about storing vegetables. The late cabbages will be making their best growth now, and the later they head with safety the better they will keep when stored, and the storing can well be deferred until November in most of our territory, and in southeastern Maryland and lower Delaware till early December.

Here (lower Maryland) I leave the late beets and carrots in the rows where they grew, all winter, merely throwing a furrow to each side of the beet rows. The frost will cut off the carrot tops but in our winters the roots are not hurt.

After frosts get severe in the northern sections the best way to save the carrots is to take them up and pack them upright in trenches, similar to those used for storing celery, and covering the trenches with boards and straw.

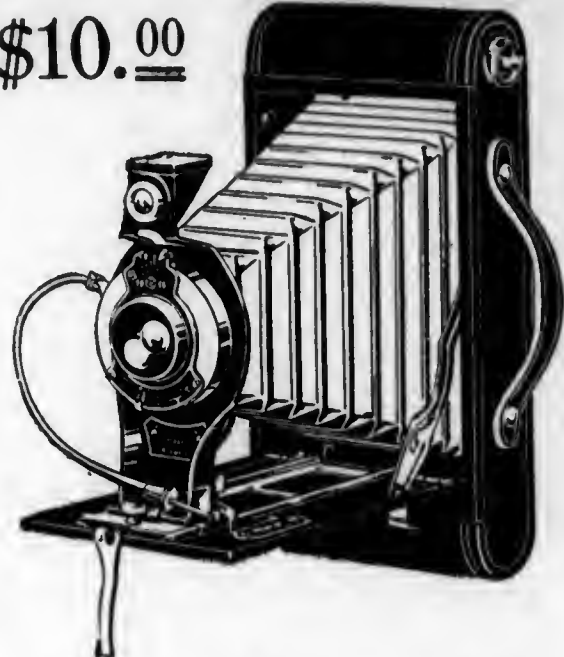
Here I make the last sowing of spinach the first of October, sowing the seeds broadcast and raking them in. These will get just large enough to winter over and make the best cutting in the spring. The spinach sown in August and Sep-

tember will be in its best shape for use during October and November.

The rows of leeks should have the soil well drawn up to them. I set these in July in open furrows and gradually earth up to get long white shanks for the winter. These being perfectly hardy, are left in the rows to be pulled when the soil is not frozen, and our soil here is open more than frozen, usually. Parsnips and salsify are now making their best growth and these, too, are left where they grew, for family use in winter. Of course, the market grower will now be getting these into the market and later. Where the soil freezes hard all winter it is better, probably, to take the roots up and bury them in a shallow pit, covering with straw and earth so that they can be gotten at in cold weather, as it will then be more easy to break a hole into a mound of earth and get them out than try to dig them in frozen soil.

When frost has cut things, clean the garden up and get all the refuse into a heap to rot down and return to the garden. Never burn anything that will decay and make humus in the soil. Everything of a vegetable nature should be rotted down. A little air-slaked lime scattered in the heap will hasten the decomposition and improve the compost. I pull corn stalks up by the roots to

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clear the ground of the stumps and the stalks go into the compost pile and are rotted down to go back on the garden; the leaves from the shade trees also go into the heap; one will be surprised at the amount of humus making material he can accumulate, and the garden well cleaned in the fall will have fewer cut-worms in the spring.

The only thing I burn in the garden is the asparagus tops; I burn these to destroy the seeds and prevent volunteer plants in the asparagus bed.

When the frost cuts the tops of the dahlias and cannas I take them up and make a pit a split deep and pack the roots in it, making pits for each. Then I cover them with several thicknesses of old papers and mound the soil thickly over them to shed rain, and I find that here they keep better than in a cellar where the dahlias are apt to dry up. In a colder climate the cannas had better be taken up in a mass with all the soil that adheres to them and packed in a heap in the cellar to be divided in the spring. Dahlias here often live through the winter where they grew, as some did for me last winter, which I left out to die as I did not care for some inferior seedlings. Seed of cannas sown the last of October will grow in the spring and in this way seed from fine varieties will often produce fine new sorts. If kept until spring the seed will have to be filed and soaked in water for several days. All the dead dahlia and canna tops, and the tops of the peonies can go with the general garden refuse into the compost heap.

Seed of the annual Phlox Drummondii sown now will bloom much earlier in spring than spring sown seed. The little plants are perfectly hardy.

Set the lettuce plants for the early winter crop in the frames and have the soil heavily enriched with rotten manure and fine bone meal. Keep the sashes off in all bright, sunny weather and cover only on frosty nights. See that the frames never lack for water, for drought is a great enemy to lettuce.

Sow more lettuce seed in a frame to furnish plants to set later for wintering in the frames, for early spring heading. For the late fall and early winter crop in the frames I use both the Big Boston and Grand Rapids in separate frames. The Grand Rapids plants are set 6 inches apart to crowd each other and blanch somewhat. These are used first, while the Big Boston comes in for Christmas. In a small frame with double-glazed sashes one can now easily get a crop of the turnip-rooted early radishes.

I am setting in a 3-sash frame now 50 plants of Lady Hume Campbell violet, and 50 plants of the Princess of Wales. These will have double-glazed sashes over them and will give us plenty of flowers during the winter, and in spring the frame can be moved to a new place for the early tomato plants.

Queries Answered

Method.—D. P. W. Maryland, writes: "Would like to grow an acre of early tomatoes next spring. Will you please advise me, through your paper, how to make my hotbed? Also any other information about how to treat plants to harden them for outdoor planting. Have several acres of clay land which takes hard after a rain; will old pine sawdust help to open up this land? Will you spread it? Does sawdust bedding make as good manure as wheat straw?"

It will not take a large hotbed to start enough tomato plants for an acre, but you will need a much larger area in cold frames for transplanting and hardening them off for setting out, for there is no advantage to be gained from transplanting tomato plants from a crowded hotbed to the open ground. A hotbed 6 feet square will be large enough to start these plants. This size frame will take two hotbed sashes each 3x6 feet. Make a slight excavation a foot wider than the frame all around and about 18 inches deep. Get fresh stable manure and pile

it near the pit and as it heats turn it and mix it and let it heat again and when it is thus started to heating pack it into the pit evenly all over. Then set the frame on this manure and put in 4 inches of rich fine soil. Bank the frame outside with manure. Then put a thermometer into the soil and put on the sashes and watch the rise of the heat but do not sow the seed until the heat has begun to decline and is about 85 degrees. Then sow the seed thinly in rows 6 inches apart. Sow about the tenth of February. Then attend to the frame and never let it stay closed when the sun shines or you will burn up the plants. As soon as the plants are a few inches high have the cold frames prepared. These are simply frames without the heating manure and only rich soil. Late in March you can set the plants in the frames deeper than they were in the hotbed, and 4 inches apart each way and then attend to watering and airing in sunny weather and have mats or straw at hand to cover the glass on very cold nights. As you live a short distance from me, if you will come to my garden I will show you the frames and how to make them. I am in Salisbury, on the Boulevard, one block from Camden avenue. Let the pine sawdust alone; it will do more harm than good. Get clover on the land and turn under.

Time for Setting Strawberries.—A. P. S. Jr., New York, writes: "Will you please tell me whether or not October is a favorable month for this locality for setting out strawberry plants? Have ordered some and the nursery writes they will ship them in October, which to me seems late."

Down here (lower Maryland) we find November to be the best time to set strawberry plants, and I would assume that October will be a favorable time with you, though the general practice in the North is to set them in the spring. Our large plant growers here will not ship plants earlier than November or later than May.

Lice on Plants.—W. S. W., Pennsylvania, writes: "Can you give me a remedy for lice on house plants, such as flower stalks, cabbages, pepper, or anything of that kind? As soon as they are in the house a while they all get full of lice and die."

Tobacco is the sovereign specific against all forms of plant lice. You can get the concentrated sulphate of nicotine from the seedsmen. I use the article called Aphine. There is also a preparation called Black Leaf 40, that is 40 per cent. of nicotine sulphate, which can be had at almost any seed store in Philadelphia. Use these for spraying the plants or make a strong decoction of tobacco stems and use this. Then in potting plants for the winter, if you chop up the tobacco stems and mix them in the soil there will be less danger from the aphides, and the stems make good manure, too.

Using Nitrate of Soda.—Mrs. J. V. S., Kentucky, writes: "How is nitrate of soda used to stimulate the growth of radishes, lettuce and other vegetables? How much is in a gallon of water and how is it applied and how often? I have used it, but have never had any good results."

Plants never use nitrogen until it is in the form of a nitrate. If we apply manure or organic nitrogen it must go through the process of nitrification or the formation of nitrate before plants can use it. The nitrate of soda is already in this available form, and is very soluble in water, and if not used by plants it is readily washed from the soil. Hence we do not use nitrate of soda except when plants are in a growing condition. If used for liquid manure one ounce to two gallons of water is sufficient, and if used on potted plants it should not be used till the plants have well filled the pot with roots and not on freshly potted plants. In the garden it is merely sprinkled along the rows when the plants are dry, so that it will not harm the foliage. About 150 pounds per acre is a good dressing. I use it on radishes and lettuce largely in order to push the rapid growth. It absorbs moisture readily and soon sinks into the soil when used as a side dressing. On lettuce and radishes I use two applications and the same on asparagus. In fact, I use it on any plant that seems to need pushing.

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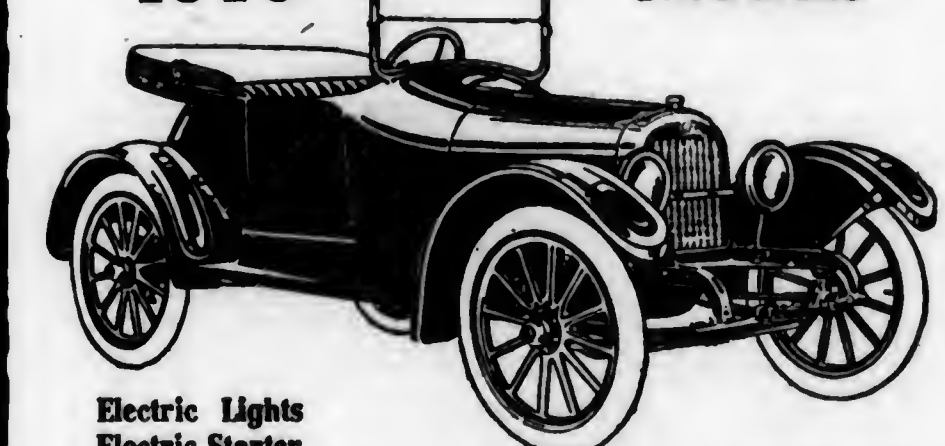
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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

Wheat Variety Testing at the Delaware Station, 1908-1916

The results of testing a large number of varieties of wheat during the past eight years at the Delaware Station show conclusively that the bearded varieties, as a class, are more dependable yielders than the smooth sorts. This does not mean that every bearded variety is a superior yielder, for a few have given low yields; yet as a class the bearded varieties have given better results than beardless. To make a comparison of these two types the best ten bearded varieties are given, with their average yields for eight years. Likewise the best ten smooth varieties are listed, with their yields for the same period. These results are shown in the following table:

SIX YEARS' TEST, 1908-1916

BEARDED VARIETIES				
Variety Name	Color	Color	Average yield	
	chaff	grain	per A. bushels	
Aburn Red	R	R	31.5	
Farmers' Friend	W	R	31.0	
Gypsy	W	R	29.9	
Lebanon	R	R	30.2	
Lehigh	W	R	27.4	
Rudy	W	R	30.0	
Red Wonder	W	R	30.6	
Rochester Red	W	R	29.1	
Valley	W	R	30.0	
Average of bearded varieties			29.8	

SMOOTH VARIETIES				
Variety Name	Color	Color	Average yield	
	chaff	grain	per A. bushels	
Currell's Prolific	R	R	26.7	
Dawson's Golden	W	R	22.6	
Early Rip	R	R	22.8	
Fultz	W	R	21.4	
Gold Coin	R	R	25.9	
Harvest King	R	R	25.7	
Perfection	R	R	27.6	
Poole	R	R	25.9	
Red Wave	R	R	21.0	
Rochester Red	R	R	22.6	
Average of smooth varieties			24.1	

Difference in favor of bearded varieties—5.7 bushels per acre.

A variety known as Leap's Prolific was introduced into the tests in 1910. This has proved to be one of the most dependable smooth wheats we have grown. The straw is of good height, but stiff and does not lodge. Leap's Prolific seems particularly well adapted to some of the lighter soils which if properly supplied with organic matter give excellent yields. Farmers in Delaware have reported as high as 50 bushels of grain per acre from this variety. The Delaware Station considers the Leap's Prolific one of the best smooth varieties it has tested. It has ranked in yield with the leading bearded sorts.

Some tests were made with a number of varieties by planting the seed 6x6 inches apart, in squares, 130 plants to a variety. These were grown on fertilized and unfertilized land the same season. By planting in this manner an opportunity was afforded for counting the number of tillers developing from each plant. Likewise the exact number of plants per variety was known. The table below shows that certain of these varieties have yielded considerably more grain than others under no fertilization. It will be noted that the bearded varieties have given better yields under no fertilizer and have developed more tillers per plant. The figures are based on the same number of plants for each variety and for each treatment.

A Comparison of Wheat Varieties, Fertilized and Unfertilized, as to Yield and Development of Tillers—Grown Season 1911.

Fertilizer				
Variety Name	Av. No. Tillers	Av. No. Tillers	Av. No. Tillers	Av. No. Tillers
	per plant	per plant	per plant	per plant
Bearded				
Farmers' Friend	8.41	7.24	7.68	670
Lebanon	8.17	7.00	7.47	665
Red Wonder	8.13	6.95	6.90	583
Rudy	7.15	7.19	6.98	634
Valley	8.08	6.60	7.47	660
Average for bearded varieties	8.10	7.44	7.30	648

Smooth				
Variety Name	Av. No. Tillers	Av. No. Tillers	Av. No. Tillers	Av. No. Tillers
	per plant	per plant	per plant	per plant
Smooth				
Red Wave	7.10	4.90	3.80	274
Fultz	6.43	4.82	5.48	340
Dawson's Golden	6.70	4.90	5.31	372
Gold Coin	6.63	5.02	4.10	306
Rochester Red	7.43	5.26	5.34	426
Average for smooth varieties	6.87	4.90	4.84	361

Recently considerable interest has been aroused concerning the "Miracle" or "Stoner" wheat. The talking point of the promoters of this variety is that it tillers freely and that about half the



Wheat Variety Tests at the Delaware Station

quantity of grain is needed for seeding. This variety has been carefully observed by the Delaware Station and the results given below show how the Miracle tillers and yields in comparison with some old standard varieties:

Variety	Number of tillers per plant	Grain in grams
Miracle	7.33	580
Mediterranean	7.49	570
Lebanon	8.10	690

Under field tests the Miracle has not given us a greater yield than varieties like Rudy, Gypsy, Mediterranean and several others. While the Miracle is a good variety it does not tiller more freely or yield better than several well known varieties. This year on our experimental grounds the Gypsy outyielded the Miracle when grown side by side.

It is no easy matter to state what variety of wheat will do best in a given locality unless one is very familiar with the soil and climatic conditions. Our experience at the Delaware Station strongly indicates that the bearded varieties are more dependable on poor soil and where the weather is humid during the time the grain is developing. This does not mean that we do not occasionally get splendid yield of the smooth types of wheat, nor does it mean that the bearded wheats do better on a poor soil than on good soil. The type of wheat to choose is one that varies the least in yield during the subnormal season and on soils of different degrees of fertility.

Some Principles of Corn

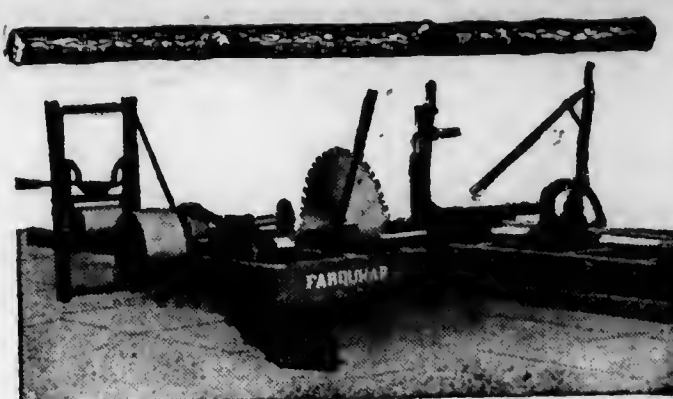
Improvement

Corn is the most valuable farm crop in the Eastern States. All soils, from the sandiest to the stiffest clay, can be made to produce large yields if the proper methods of soil improvement are followed. The use of the legumes, Crimson clover, vetch, soy beans and cowpeas will rapidly put the land in condition for good yields of corn. By careful attention to the three essentials, good seed,

good soil and good tillage, the yield may be increased to the maximum.

Probably the essential in corn growing that is more generally neglected and deserves special attention at this time, is the seed. With the proper variety and care in selecting and preserving seed corn, the average yield of corn would be increased from 10 to 25 per cent. Since one bushel will plant from 6 to 7 acres, it is not a heavy task to take care of sufficient seed to plant a large acreage.

Investigation shows that the average stand of corn is about 75 per cent. This means that the ordinary farmer is cultivating 100 acres in order to get a yield that might be grown on 75 acres. The cost of plowing, planting and cultivating



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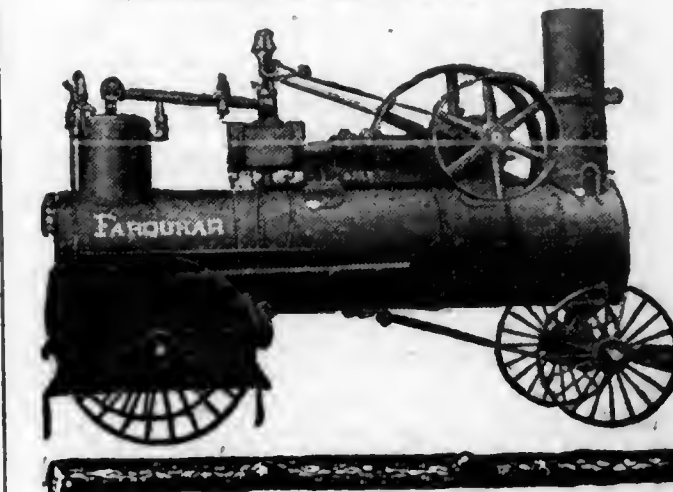
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you wish to plant, lay them out in rows on a table, platform, or on the floor. At the butt of each ear inscribe a number on the floor, using chalk or pencil. Number the ears consecutively from 1 to the last. From near the tip, middle and butt of each ear remove three or four kernels, 10 in all from each ear. Now take a shallow box 3 or 4 feet square and about 3 or 4 inches deep, and in it place about 2 inches of sand or sawdust. Moisten it down well. Then over this spread a white muslin cloth, cut to fit, which has been marked off into 2-inch squares with a lead pencil. The squares are numbered in order from 1 in the upper left-hand corner, to the last square in the lower right-hand corner. If one is to test a large quantity of seed at one time, several boxes should be used.

Now place the kernels on the squares. Those from ear No. 1 on square No. 1, until the box is filled. Over the kernels place a cloth, on which sprinkle one-quarter inch of sand. Moisten thoroughly and place the box in a room where the temperature does not fall below 70 degrees. In four or five days most of the kernels will have sprouted, and in a week those which have not germinated may be considered dead. Care should be taken not to disarrange the kernels on their respective squares when the upper cloth is removed. If the kernels on a certain square, say No. 14, fail to sprout, go to the seed ears and pick out No. 14 and throw it in the feed bin. If only one or two kernels in a square fail to germinate, the ear from which they came should not be used for seed. By this method of testing it is possible for the grower to be reasonably sure that his seed corn will grow.

In successful corn growing much depends on the variety. Select a variety that will use the season to good advantage yet mature promptly. In some localities much corn is lost each year through lack of proper maturity. Some varieties are better yielders than others, due to the type of ear. Consequently, in beginning the improvement of corn it is well to secure seed of some one who has carefully selected his seed to a certain standard for a number of years. More rapid progress can be made if improved corn is used as foundation stock.

In general it is safer to secure seed corn from a neighbor who is a successful grower than to send away for seed. Corn grown in the same locality for a number of years has adjusted its habits of growth to soil and climatic conditions, and, other things being equal, is more likely to yield well than seed brought from another section. The chances are that seed from a heavy soil will, when planted on an open, sandy soil, fail to produce sound corn. Choose a variety with a medium-sized cob and moderate depth of grain to mature well. Varieties with large cobs indicate a late maturing habit.

All seed corn should be bought in the ear, for two reasons. First, in order that the type of ear may be examined; second, that the vitality of seed may be satisfactorily tested. Shelled corn may have come from all kinds of ears, many of them undesirable for seed purposes.

No matter whether one begins corn improvement with his own corn or with improved stock it will be necessary every year to select the seed ears with reference to certain characters if the best type of ear is to be retained. Ears of every variety will vary more or less, consequently, some attention must be paid to the characters of the individual seed ear.

The best shape for an ear of corn should approach the cylindrical type. Tapering ears usually mean a less quantity of shelled corn to the cob.

The proper proportion of length to circumference in an ear should be about 4 to 3, or the circumference should be three-fourths the length. It is rarely desirable to select the longest ears that can be found nor the shortest when the largest amount of shelled corn is desired.

Ears of corn with wide spaces between the rows carry less corn per ear than ears with closely fitted kernels. Select for the more compact ears.

The maximum amount of shelled grain is found on ears with the butts and tips well filled out. It is not necessary that the tip of the ear be completely filled, but the cob should be well covered.

A very large cob is not desirable, as it usually indicates a shallow grain and late maturity. Large cobs are often responsible for molding and rotten corn. Select ears with cobs of fair size, as the most shelled grain of good quality is not found on small cobs.

The kernels should be of good thickness and about one and a half times as long as wide. The shape should approach that of a wedge, but not pointed. A kernel of fair thickness will give the greatest density or weight and generally indicates vigor.

The yielding capacity of an ear of corn can be determined only by testing. This is done most satisfactorily by the ear row method. This places the ear upon a performance record which is the determining factor in high yields. Selection of ears of various types is fairly easy, as corn offers a large number of variations, but corn breeding is more difficult because of the habit of the plant to cross pollinate and the difficulty of keeping the breed pure. Care also must be exercised to prevent too much inbreeding where the stock is closely selected and isolated. Only the best ears from the best plants should be used for breeding purposes.

After selecting the ears they should be carefully tested for germination. Only the most vigorous should be retained. Next, each ear should be tested for prepotency of yield performance. Each ear should be numbered and a portion planted to a single row of about 100 hills. The rows should bear the same number as the ear from which they are planted. Only about one-third of the kernels from each ear are required to plant a row. The remaining portion of each ear should be retained, properly numbered, for the next year's multiplying plot. When the corn is up to the height of a few inches, the hills should be thinned to two stalks per hill. Note any differences between the rows as the plants develop. At harvest time each row should be husked separately and weighed. The high yielding rows are thus determined and the remnants of ears from which rows were planted are now shelled together and planted the following year in a multiplying plot which will supply seed for the general farm. Select ears are now taken from the multiplying plot, tested by the ear row method as above. By this method the higher yielding strains are blended and progress in yield should follow.

Queries Answered

Meadow Fescue.—C. R. R., Oklahoma, writes: "Will you tell me where I can get English blue grass or meadow fescue seed? Please give your estimate of this grass. Is it particularly adapted to wet, clayey land?"

These grass seeds can generally be secured from the leading seed stores. St. Louis or Kansas City seed houses can supply you. Meadow fescue will generally do well on moist clay lands. In latitude, this grass will grow wherever timothy does well. It has never gained the popularity of timothy because of the difficulty of securing good seed and on account of the high price.

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POULTRY

Edited by F. V. L. TURNER

All letters, inquiries and requests in reference to poultry, should be addressed to the Poultry Editor of The Practical Farmer, Philadelphia, Pa.

Practical Poultry Talks

The Main Guide Post in Poultry Work

Health, above all considerations, is the safety brake in poultry culture; there is no better time of the year to either complete protective and preventive measures or to begin and finish them at once, than now.

Two factors, sanitation and draft-free quarters, aided by chemical preventives, constitute poultry health insurance and it is easily obtained at small cost in labor and money.

Were it not for the fact that fully 90 per cent. of the structures used for poultry keeping in the whole of America are insanitary the poultry industry would be greater in value than corn, wheat and cotton combined, instead of occupying second or third place in agricultural enterprises. With these conditions so glaringly apparent it is well to call attention to the various diseases encountered at this time of the year and to prescribe measures for their control.

Commonest of all the diseases, and most destructive, because of its insidious contagion, is roup, either catarrhal or diphtheritic. Its control is difficult and unsatisfactory; once it becomes epidemic its recurrence year after year is almost certain, is equally disastrous each season, burning itself out only with the help of warm weather. Remedial agents there are that will assist in its control in the very early stages; prevention is far more satisfying and so vastly less expensive in fatalities.

Catarrhal roup is the harder to combat; weeping eyes (small bubbles in the corner of the eye) are usually recognized as the forerunner of this nasty disease. Almost at once, after its appearance, the affected fowl wipes its eyes on the flight coverts of the wing—more properly, on its shoulders.

Soon the catarrhal condition extends throughout the entire nasal cavity, in which the chicken's eye floats, and the entire face becomes a purulent mass, death coming sooner or later. Distribution of the disease takes place through the constant shaking of the head, puss particles being thrown off at each shake, the entire premises becoming infected.

In diphtheritic roup the sides, floor and roof of the mouth give the first evidences, a simple cold and inactivity of the affected bird usually indicating the disease; an examination of the mouth is required to determine its presence, but not invariably is the first evidences in the mouth; sometimes a watery discharge is noticed both from the eyes and nostrils. Inactivity usually carries with it an arched back, closely drawn in head, with more or less prostration.

Bronchitis is the result of dampness, drafts, or in some cases, irritating dust, etc. Cases of bronchitis may be, in rare instances, an extension of diphtheritic processes to the trachea and bronchi or air sacs. An audible wheeze accompanies bronchitis, finally becoming a gurgling rattle; if remedial agents, usually astringents alternated with emollients, are not quickly employed, the disease becomes epidemic and fatal.

For fatalities the liver of the hen is responsible to a considerable degree, though this degree is not absolutely comparable to diseases of an epidemic

form. Liver troubles are of several kinds, all, to a very great extent, being brought about by conditions of care, feed and lack of internal asepticism or intestinal sterility. It must be remembered that the liver is about the most important organ in the bird's make-up; it perfects the bile for its digestive function, brings about all of the blood chemistry of the fowl and is always susceptible to parasitic attacks, fostering the incubation of disease producing germs and distributing them to various parts of the body and to other vital organs.

Congestion of the liver is a common disease, clearly due to improper feeding and to inflammatory or irritating conditions of the intestines. Atrophy and fatty degeneration of the liver are also more or less common hen ailments.

Heavy feeding of starchy foods is largely responsible for most liver troubles, intestinal cleansing or aseptics being the counteracting condition. Epsom salts, 20 to 30 grains, and 2 to 3 grains of bicarbonate of soda, always together, are cleansers.

Greater exercise, waste material (green food), tonics and animal food, all have a tendency to decrease the effects of rations containing too much corn or oil. Many of the liver troubles are not recognizable in life, except in a few cases, by those with wide experience.

Since sanitation and draft-free quarters are primarily disease preventives, little medical treatment is suggested in connection with this article except to cover the ground of preventive measures, as in the case of recognizable liver diseases. It is the conclusion of all disease specialists, human and animal, that the practitioner's achievements come not from the administration of remedial agents, but from a knowledge of preventive practices. Obviously, if a hen house is full of loose joints, cracks, is so constructed, is so exposed to elements, that uncleanness, dampness and drafts make up a part of the poultry system the physician's function resolves itself into the doubtful role of a compounder of chemicals in an effort to help nature assert herself.

Failures are a natural sequence to remedial efforts; success comes quickest through well directed preventive practices. The use of accepted germicides in the drinking water and rations will lessen the spread of epidemic forms of diseases—predisposition to disease is the result of criminal neglect; it is without warrant and necessity.

What We Are Asked

Paralysis.—Mrs. C. D. T., Pennsylvania, writes: "We have never had any of our chickens lose the use of their legs and wings before this season—there is any reason why an epidemic of what appears to be paralysis should break out this year when we are using the same methods as we have employed for years?"

This question can only be answered by simile: Dr. Flexner, of the Rockefeller Institute of Research, who has been twelve years delving into the mystery of infantile paralysis, tells us that this disease is carried by dogs, cats, poultry and other animals, hence the animal kingdom must be the vehicle of contagious human diseases.

However, there is nothing alarming in the statement; chicken pox may exist in a most extensive epidemic form in poultry and yet not a human in the affected section may contract the disease, or vice versa.

In dairy cows those affected with tuberculosis are killed, presumably be-

cause they menace human health. Barnyard poultry contract tuberculosis, as evidenced by the researches of Sutton, England; Koch, the eminent German authority on tuberculosis; Nocard, a French veterinarian; and Zuern, Germany, and others.

Diphtheria, in ordinary sore throat form, has developed in poultry attendants, attested by Loeffler, Loir, Ducloux and Moore. The avian disease in this case differs widely from the human affection and is in much milder form. Recorded cases have passed on the human diphtheritic bacillus to fowls and it has been continued in contagion for some time.

Paralysis in animals is more closely related to human paralysis, though, than some of the other diseases that are claimed communicable from and to the higher and lower orders, upon the same principles that tuberculosis in apes, monkeys and chimpanzees and baboons is identical with the human disease of that name. Tuberculosis in cows is caused by the bacillus tuberculosis of mammals; contrary to other avian life the parrot contracts mammalian tuberculosis only and from the parrot it is highly communicable to human beings.

There are undisputed evidences of poultry and pigeons having contracted human consumption and those birds so affected can disseminate the disease.

Rabbits, guinea pigs and dogs readily contract parrot tuberculosis from the parrot, whereas poultry and pigeons do not. Such precautions as rubber gloves and disinfectants should be used in caring for diseased birds.

Leg weakness, misnamed paralysis, in its ordinary form, is relieved by feeding light rations, bran, milk, stale bread and green food. Bicarbonate of soda, two grains to any fowl over three months of age, is the remedial agent.

Mating.—A. F. S., Jr., New York, writes: "I wish, in the spring, to keep three pens of 100, 200 and 300 birds. I have six roosters I wish to use. Can I use three roosters for, say, three weeks and then put in the other three, and will the new stock blood take effect as soon as put in the pen?"

From the moment of mating twenty-four hours will give 10 per cent. of fertility, 80 per cent. being secured in four full days; since the eggs laid for 21 days after removing a male from a mated pen are fertile the effect of the first mating is felt for that time. You will notice, in changing males, any diminution in fertility where the change is made over night; provided both birds are equally virile. This practice, as you propose it, accomplishes nothing, known to expert breeders, except the highly probable production of two families with widely different capacities. If a male is known to be from a heavy laying family he should be retained throughout the mating season.

Worth While Suggestions

Modern methods mean much more money in early eggs, more meat, fatter fowls and less labor.

Sour milk is the best tonic, stimulant, sedative and general health builder known to poultry science.

It is a far cry from 70 eggs a year from one hen to 140, but the better breeding throughout the country at large is surely carrying egg production to the higher figure—are you trying to improve your egg yield?

Surely there must be some vegetable growth that will furnish the hen the same materials that are found in wheat, even though it requires a combination of vegetable growths. To properly conduct a test for egg production with any cereal or vegetable growth two pens of birds should be tried out, one on a standard ration, while the other is fed whatever the experimenter may select. The object is to cheapen the cost of production without decreasing it. These experiments will be interesting to the entire poultry producing world, besides being constructively educational.

It is not necessary to furnish blankets to the molters these chilly nights, but it is well to give them draft-free quarters.

Don't forget a little old process oil meal and a few sunflower seeds to help biddle re-clothe herself.

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HORTICULTURAL

Edited by C. A. McCUE

Delaware Apple Growers Combine

For some time the apple growers of Delaware have felt the need of an organization that would be of aid to them in advertising and marketing their apples. A preliminary meeting of growers was held in Dover late in August. Plans for an organization were discussed and another meeting was called for the 13th of September. At this latter meeting an organization was completed and officers were elected, with William Dickson, of Woodside, as president.

The object of the organization is well stated in the preamble to the constitution, and is as follows:

"The object of this association shall be to promote better methods in growing, marketing, advertising and to establish a standard pack of Delaware apples; to secure legislation favorable to the apple industry of Delaware; to secure just and equitable transportation and storage facilities and rates for Delaware grown apples; to promote and support any lawful object that will insure just and lawful financial returns to the apple growers of Delaware; to establish and protect a trade mark for Delaware apples; and to further the dissemination of knowledge or research that will benefit the apple industry of Delaware."

One of the main things that appeared to be in the minds of the growers present was the establishment of a trade mark for the organization that would guarantee the pack of any barrel or box of apples upon which it appeared. It was also agreed that before any trade mark could be used it would be necessary to formulate rules for a standard pack. A committee was appointed for this purpose and when their recommendations have been tried out, doubtless a trade mark will be adopted. It is proposed that only those members whose pack continually comes up to the standard pack will be allowed to use the trade mark.

When a trade mark that actually guarantees a pack is established the growers feel that they will be in a much better selling situation than heretofore, because with an established brand and a guaranteed pack they will be able to sell car lots on track by telephone or telegraph and thus save brokerage commission and other charges, as well as getting the full value of the market. This method of handling fruit has worked very successfully in the Vineland district with peaches.

The organization formed has untold possibilities and it only remains to be seen what the growers are going to make out of it.

Apples—Cold Storage or Sell?

Experience has proved that early fall varieties, such as Jonathan and Grimes, are poor storage propositions. Not because they will not keep in storage, but because the advance in price on these varieties in midwinter is not, on the average, great enough over prices at harvesting time to warrant payment of storage charges and interest on idle capital invested in the crop. On the other hand, a study of prices on late winter varieties of apples clearly shows that on the average it is a good proposition to store for an advance in price.

Take Ben Davis, for example. Ben Davis on the New York, Philadelphia and Boston markets is a poor storage proposition up to March, yet storing for the April, May and June market is an excellent investment. On the average,

Ben Davis does not advance enough in price, over fall prices, to pay for storage and other necessary charges connected with storage, up to the middle of March or first of April to warrant selling at that time. After April first the price advances rapidly and storage becomes a good proposition. When to sell and when to hold on to certain varieties held in storage is an important question that a critical study of the market for those varieties, month by month, for the past fifteen years would throw much light upon.

About the only conclusion that we can draw is, sell fall varieties at once and store winter varieties for remunerative prices.

Delaware Apple Packing Law

The last legislature of Delaware passed an apple packing law very similar to the New York law. Its enforcement is in the hands of the State Board of Agriculture and it is to be enforced during the coming apple season for the first time. A lively discussion is going on among the growers as to just what latitude the law allows in packing. For instance, there is the question of color. Delaware fancy grade must be well colored for the variety. Every one is anxious to know just what ruling is to be made to define "well colored"—is it half, three-quarters or all colored? What shade of red will be allowed to pass for fancy? What grade should be made of apples that are sound in every respect and still poorly colored? According to the law apples that are first-class in every respect but color must be graded B grade.

Many growers seem to feel that there should be a maximum as well as a minimum size for each barrel. They say that it is unfair to pack a barrel of 2½-inch minimum diameter and then face and tall with 4-inch apples. On the other hand, the commission men urge them to face with the largest apples that they have, regardless of the minimum size. They say that a barrel so faced is worth

from 25 to 50 cents more a barrel than one faced with the same size of apple that is used in the middle of the barrel. Most Delaware growers say that they would prefer to face their barrels with a grade of apples that truly represents the contents of the barrel, yet they are compelled by the whims and peculiarities of the buying public to face with an apple that is better than the general contents of the barrel. If a man stamps his apples "Grade A, minimum size 2½ inches," he is clearly within the law if he faces with 4-inch apples and still has no apples under 2½ inches, yet a barrel so packed looks bad. What is the solution. Pack straight on the "see-top-see-all" principle or face with the best you have? As long as the buyer will pay more money for the big faced barrel I am afraid that most Delaware apples packed in barrels this year will be faced with the biggest and best apples obtainable, regardless of whether the minimum size stamped upon the barrel is 2, 2½, 3 or 3½ inches.

Every grower is anxious that the law be given a fair trial and all hope that it will prove a success.

All the county agricultural agents are holding themselves in readiness to assist the growers in packing and classifying in accordance with the law.

In New York many apple growers, rather than run chances on wrong classification, have packed their apples straight and marked them unclassified. Such a marking was manifestly unfair to them, as in many cases the fruit would run A and B grades and sometimes fancy. With the numerous sources of information as to packing under the apple law available no Delaware grower should make that mistake, and if he does he will have no one to blame but himself.

Other states are thinking over the apple grading law and it is to be hoped that New Jersey and Pennsylvania will soon fall into line. The packing and grading law has certainly proved a good thing for New York, why should not we all profit by their experience.

"For the Land's Sake use Bowler's fertilizers; they enrich the earth and those who till it."—Adv.

The Women's Exchange

This is the farm women's own department—for them and by them. It is devoted to the discussion of topics of everyday interest to the women of the farm family. The Practical Farmer invites all farm women to express their views on the topics under discussion but also to propose topics for future discussion. The best letter published herein each issue will be awarded a prize of one dollar, and for each other letter published we will pay fifty cents. Address: WOMEN'S DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

OCTOBER 15.—What has been your experience with kitchen cabinets? Have they any disadvantages to offset their advantages as labor savers? If you are using a home-made substitute of any kind, tell us about it.

NOVEMBER 1.—In training your children, how much and what regular work do you require them to do at home and on the farm—outside of their school duties, of course? Do you believe in paying or otherwise rewarding them for doing this work?

Get your contribution in early. If it does not reach us at least 15 days before the date of issue, it will be too late.

How do you heat your home? What in your experience is the best method, what have been your successes and failures in trying to accomplish better results in heating, what has it cost and what are your recommendations to farmers and their wives who are seeking good heat at a moderate cost and a minimum of labor.

Mrs. E. G. F., Dryden, N. Y.—I have many friends using warm-air furnaces, hot water and steam heating outfits. The warm-air furnaces are comfortable, and perhaps would do for an old house if it was warm and tightly built. But they are unhealthful, because of the excessive dryness of the air. They also consume a good deal of fuel. Steam

heat seems unsatisfactory, as it requires lots of fuel and is slow to respond.

The ideal heat, to my mind, is hot water. It is very quick to register changes of temperature, warms up quickly, and is very saving of fuel. But even this is unsatisfactory if too cheap an outfit is purchased. Buy only of a known reliable firm. Insist in your contract that the pipes be absolutely frost-proof in all exposed places—doubly insulated—and that all pipes and joints in the cellar be heavily wrapped with asbestos, to prevent loss of heat. In fact, be as careful as possible to have a perfect job of installing done—no leaks or poor connections. This, for quite a large house, ought not to cost over \$250 to \$300. The price will vary with localities, climates and the amount of room to be heated. But when properly installed, the heat and its later operation and up-keep are ideal. The entire house can be kept at summer, or comfortable, heat at very little, if any, expense over what one large coal heater would use of coal.

In our case we are going to economize by using the coal heaters just a little longer and then put in a hot-water outfit when we do feel able to install a heating system. And the direct heat of a good base burner is very satisfactory

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indeed, with attention to moisture and ventilation. I air my rooms thoroughly at least twice each day, usually oftener, and always keep a dish of water for evaporation on each stove day and night. It is surprising how much the air will absorb and still be too dry for the furniture or for healthful conditions. If the thermometer registers 70 degrees and the rooms still feel chilly I know at once that the air is too dry. Seventy degrees with proper moisture content is plenty warm enough for even delicate people, or those not actively exercising. If you cannot be comfortable unless your rooms are at 75 or 80 degrees something is wrong, either with you, your manner of dressing, or with the ventilation and moisture. As a matter of health for the family it will pay to investigate and give proper attention to details.

People who are in a position to know, say that some reliable heating system properly installed in the average farm house will quickly pay for itself in the improved health conditions of the family and their consequent better efficiency. Cold floors, damp, clammy rooms, uneven temperatures, cold halls and corridors are all a menace and tend to keep up a succession of colds in the family. The added value to our real estate and the great increase in home comfort during our long, cold winters are also factors that count largely in favor of a heating system.

Mrs. C. H., Aspers, Pa.—The furnace, like the gasoline engine, has come to stay and I think any one building a new house or remodeling an old one should install a furnace. Four years ago when we remodeled our house I suggested a furnace; husband at first disapproved because his mind had been biased by statements he had seen in papers of it requiring from 13 to 15 tons of coal a season. I finally succeeded in convincing him that cases like that were either a poor furnace or a very extravagant operator. We were very undecided as to what kind, and finally decided on hot air, which I have never regretted. I object to hot water on account of the pipes bursting, and to steam because it requires more fuel, as the water must create steam before you get any benefit. Not so with hot air, for frequently before real cold weather begins we want the house warm for a day or an evening, we kindle the fire and lay on some chunks and in ten minutes the heat may be felt. As for fuel, I do not need any more when the furnace is running than when not, for an unused room, even, will become dusty. Ours cost \$125 complete and has registers in nine rooms; of course, we only use three upstairs and two down constantly, the other four at our desire. I keep the bed rooms well ventilated and not too warm. It is the tightly closed room that becomes unhealthy. We burn 2 to 2½ tons of coal a season and I wouldn't trade my furnace for the finest coal stove I ever saw. So I say again with emphasis, by all means install a furnace.

M. M., West Rush, N. Y.—After having experienced both hot stoves and a furnace we have found hot water to be the best heat for our home. There is no dust and dirt as with hot air, and the ashes and litter left from the old-fashioned coal stove are entirely done away with. Hot water is an even heat, and with the proper sized radiators correctly placed against the outside walls, or under windows or window seats, any room can be comfortably heated on the coldest days. Hot water retains the heat, and when once started requires but very little attention—shaking once a day in moderately cold weather and filling with coal twice daily. We have burned a good grade of pea coal, which cost about \$4.25 per ton. We thereby save \$2.50 on every ton, and like it as well as furnace coal. Hot water is probably more expensive to install, but the first cost is the last. A good furnace is \$150, and hot water can be put in for from \$200 to \$300 according to the size of the house. It needs but little overhauling, and will outwear two furnaces. The attention given to the boiler is less than that given to the kitchen range.

G. F. S., Georgetown, Del.—We replaced an old hot-air furnace, with registers in floor, with a combined steam and hot-water boiler, with radiators. (We could use either steam or hot water). A neighbor had a combined hot-air and hot-water (coal), and another a wood-burning furnace made from a box stove bricked in, with pipes, registers, etc.

Our furnace burned about 12 tons of coal a year (in northern New York). From experience and observation, we conclude that stoves are least desirable. If burning coal a combined hot-air-and-water, or steam-and-water, is the best. For those in the house continually hot water is best; but when one comes from the cold a hot-air register is most satisfactory. We now live in Delaware, and have wood "to burn," hence contemplate a furnace of brick, with grates for wood, fire-box for cord wood and chunks; an iron heat chamber above fire-box, pipes leading therefrom to registers commonly used.

Mrs. F. W. M., Tully, N. Y.—Our large, old-fashioned farm house has been successfully heated for 18 years by stoves in which we burn either wood or coal. A well laid wood fire in a sheet-iron "chunk" stove will heat up a room in five minutes. Such a stove was used for many years to heat a very large sitting room, two adjoining bed rooms and often the hall and some of the upstairs rooms. We never had to sit around shivering an hour or so waiting for the fire to burn.

This stove was replaced two years ago by a large coal base burner, with mica on three sides showing the fire. This has proved very satisfactory, as the fire keeps continually from November until May by shaking night and morning, emptying ashes and filling stove mornings only. This makes much less work and litter than a wood fire, and if we wish to be away from home all day the house is warm when we return. Also the danger is much less. If it is ever necessary to be up at night the fire gives sufficient light to move about in. Then, too, a heater where we can see the fire is appreciated by all our family. I visit homes heated by furnaces, steam and tight stoves, and enjoy with the housewives their freedom from muss and care of stoves, but I am sure we would sometimes miss the cheerfulness of the open fire.

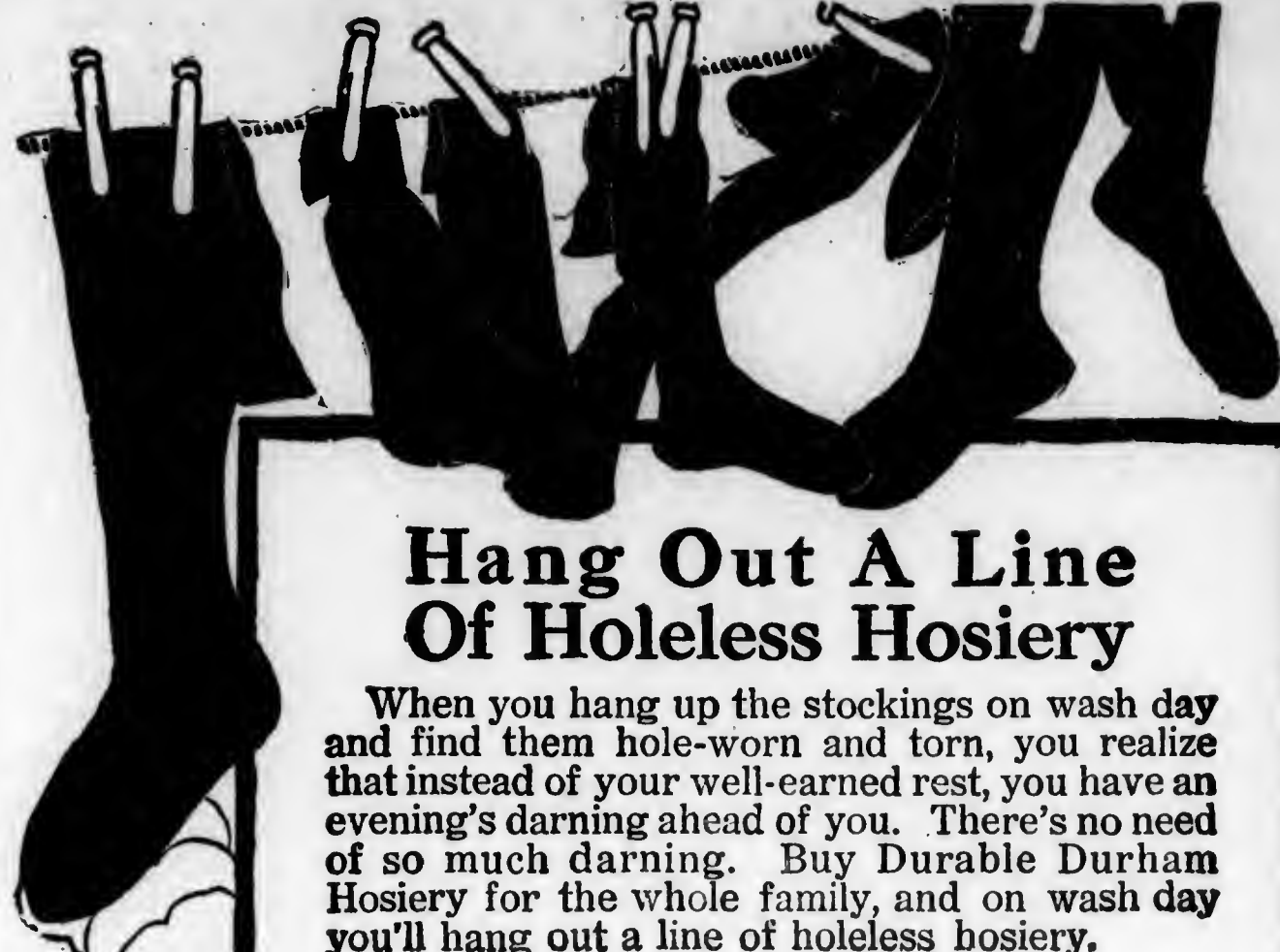
Several of my friends have open fire-places in their farm houses. From the points of pleasure, ventilation and sentiment, these are the finest of all. But on account of the work to supply wood and logs, the litter, etc., I know these are seldom used. I have known stoves to be set up in front of the fire-places for general use, and the latter used only for Thanksgiving or Christmas festivals, etc. Considering the mild weather of spring and fall our coal fire averages to cost us only \$1 per week, or about \$25 for the season. We burn wood mostly in the kitchen stove. As we have a large wood lot we need count only the cost of preparing this fuel. We burn 30 or 40 cords, worth from \$2 to \$2.50 per cord; so our heating costs about \$100 per year. I know people who live in town whose furnace alone costs over \$100 per year to heat no more rooms than we use. Then their cooking heat is an added expense. I'll still speak up for the good old-fashioned stoves.

C. J. S., Shiloh, N. J.—We heat our home with hot air. We find it very satisfactory. Get the heater as near the northwest corner of the basement as possible, for best results. We did not feel that we could afford anything but hot air. The cost of installing and the price of the heater 12 years ago would only be a snare and a delusion in this day of advanced "high cost of living."

Like most farmers, we can double up in winter. The whole house is not heated every day, but just the rooms we need most; in case of company or any other emergency the heat can be turned on elsewhere and if it is very cold the heater run higher. Ordinarily, for our own family a very low fire heats enough rooms. We put in the required number of tons of coal in August each year and find that our method of heating is very economical. When the fire goes out in the spring the heater is carefully cleaned and a big piece of lime placed therein, to absorb dampness and keep the heater from rusting. I love the hot-air heat. The registers are in the floor and it is very easy to warm one's feet if they are cold when coming in from out of doors. With warm floors one can pass a winter very comfortably.

Mrs. A. D. A., Trappe, Pa.—Our home is a small farm house with few modern improvements. We do not own it and have vainly tried to persuade the owner to install steam heat for us, so we have solved the difficult problem of having a

(Concluded on page 370)



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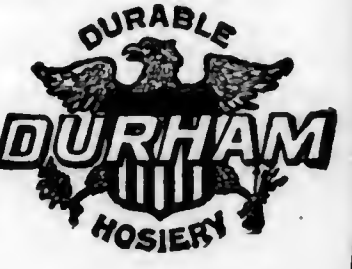
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OUR EXPERIENCE POOL

All our readers are invited to contribute their experiences on the topics under discussion. \$2.00 will be paid for the best, and \$1.00 for the next best contribution, and 50c for each other article published. Contributions must be in our hands 15 days before date of issue.

Topic No. 1205, Oct. 15.—Reclaiming Waste Land. There is a movement on foot to encourage farm boys in the reclaiming of waste farm land, in which The Practical Farmer is joining by offering prizes for descriptive manuscripts showing the work done (see details on page 338 of last issue). In order that the boys may have the benefit of the experience of their elders in reclaiming waste land, we ask you to tell us and our readers in manuscripts of not more than 200 words of any land reclamation project you carried forward to a successful end—whether it be the clearing away of underbrush and stumps, the blasting out of rocks, the draining of swamps, or any other work of this sort. Tell what the work undertaken was, how you did it and what you accomplished.

Topic No. 1206, Nov. 1.—How do you pick, pack and market your apples? Do you sell them at harvest time or put them in storage? Do you market through a co-operative association or sell individually—if through an association, what is the nature of the operation and what success has been attained. What prices are you receiving for this year's apples? Limit 250 words.

Topic No. 1204.—How shall we light the farm home? Tell us your experience with electricity, acetylene gas, gasoline or improved oil lighting systems, with cost data and results obtained.

M. F. G., Dryden, N. Y.—Having been considering the question for personal reasons, I have been looking into the comparative expense of the different lighting systems, their initial expense and the up-keep. The matter of expense varies so greatly with localities and the buildings that are to be lighted that I will not discuss it here. It is generally considered that electricity is the ideal light for safety, convenience and quality of light, though somewhat expensive to install. Many farms have natural water power that would support fine lighting plants at very little cost after the initial expense. But for any farm there is the gasoline engine, which makes a very satisfactory and dependable source of electricity, while the engine can also be used for many other purposes. I know of one very satisfactory electric lighting system that can be installed for \$275 for the ordinary home, supporting twenty 20-watt lights, or for the extra large plants \$325. An added purchase of a motor for transmitting the power at an expense of about \$15 will enable even a child to run a washing machine, separator, the milking machine or pump water to a height sufficient to support a very desirable water supply system for the home. This seems to me an ideal outfit.

My brother-in-law has been using, for about a year, an acetylene gas system, and it seems ideal also, in its way. It lights a 125-foot dairy barn, a milk house, the cellar and both floors in an uncommonly large farm house. He considered the expense of installing and up-keep as less than that for electricity, though he had two gasoline engines on the farm. The quality of lighter in operation has to be considered with this system, though in a family of responsible adults this is an item not to be considered a detriment. His system is one that is self-igniting, requiring no matches to light the burners.

A neighbor has Blau gas, which is purchased in tanks, and it certainly gives splendid light at a very reasonable expense.

For the farmer who feels that he cannot have any of these lighting systems with the present high cost of living, for some time, anyway, there is a very inexpensive light to be had by any one anywhere—the light of which I firmly believe to be clearer and stronger, with a fine, more even glow than either electricity or gas. This very desirable light is produced by the kerosene mantle lamp. Kerosene can be bought at slight expense anywhere. The mantle attachment makes the light very economical of oil, as a large proportion of the flame is fed by gas, which, combined with oxygen, makes a very inexpensive light for common use.

The only precaution to be observed is care in handling the mantle and seeing that the light is not turned too high at the start. A 100-candlepower light that will make reading or sewing a pleasure in almost any part of the room can be supported on half watt the ordinary Rochester burner lamp will consume of oil.

W. H. C., New Berlin, N. Y.—The writer, after looking over the various

decided upon acetylene gas, and now, after some three or four years use, feels that no mistake was made. The reason of my choosing acetylene was mainly four points of superiority: First, a better light and more of it, for it is conceded to be the nearest to sunlight of any artificial light; second, more within the means of the average farmer who has to make his living and the far too few luxuries which we enjoy from the farm alone; third, the after care and up-keep requiring but a fraction of the time and attention that your electric system does; fourth, the gasoline and improved oil lighting systems, which burn upon mantles, I would not consider at all.

The cost of installing will vary with almost every farm plant, according to the number of lights required, and the many obstacles to be overcome in piping the buildings. By all means get a water-fed generator, then you can burn the large carbide, which affords considerable more gas per cwt. and takes far less time to recharge; this will cost about \$100 if rightly bought, and as to the fixtures you can get almost any pattern and price to fit your pocketbook, and upon many a farm there is some one handy with tools who can do the piping of the buildings; my 15-year-old son and myself did ours complete in two or three days, besides doing the regular farm chores; and then there is rather a proud feeling when you can show your neighbors your job all completed.

In your main living room and others where you wish plenty of light, use ¾ burners; in bed rooms, halls, etc., ½ is ample. By all means get part, if not all, mechanical lighters—not the ones you have to first turn on the gas then turn again to get the light, but the ones you simply pull the wire and have your light, push it up and it is out; and for a little extra expense you can have the push buttons any and everywhere, the same as with the electric light systems. But the writer's advice to his brother farmers is, by all means, to have something better than the oil lamps.

R. C. U., Peach Bottom, Pa.—Farmers should have as good light about the farm home as do people in town. For some years we have been using acetylene gas, and I will say that it is hard to find a better all around light for farm homes. We have a Pilot generator that will furnish gas enough for 25 lights. The generator is in the cellar. A great many people would object to this, but we never had a bit of trouble; however, if I were installing a new light plant, of course it would be one of the later improved generators, and it would be kept away from the buildings, a short distance, so that it is any gas did accidentally escape it would be in the open air. By having the generator in the cellar one has to be very careful that lights and fire of every description are kept away from it. We have the lighting attachment to every light in the house, so that we simply turn on the gas and pull the little chain and the light is on. The lighting device makes the acetylene almost as handy as the electric light.

I think that acetylene gas makes a much better light than does electricity. Acetylene makes a pure, odorless white light. Our light bill will average about \$14 per year.

H. C. B., Hanover, Pa.—In my opinion, one of the greatest improvements I have made to my farm has been the installation of an electric lighting system to take care of my lighting and small power requirements. I have had this proposition under consideration for a number of years, but owing to the number of lighting outfits on the market, with advantages claimed for each particular plant, I was unable to come to any decision until last summer.

One day I happened to be talking to a friend who was fairly familiar with water power, and he suggested that I had sufficient water in a small stream in my meadow to produce the necessary power to drive a small dynamo, and that by developing that power I could avoid the cost of operation of an engine to drive the plant I might install. Being acquainted with several members of a

lighting systems of the present time, development of water power and in the building of water wheels for many years, I decided to have them investigate this little power, my idea being, if possible, to get a plant with a minimum cost of up-keep.

The report of the engineer sent to make the investigation showed that I had a flow of 15 cubic feet of water per minute in my stream, and that by going a distance of 500 feet I could obtain a

fall of 14 feet. Owing to the lay of the land it was not possible for me to build a dam, but I had to depend only upon the natural flow of the stream for my power. It was therefore deemed advisable to use the entire fall, carrying the water by means of open ditch and pipe to the place where the wheel and power house were to be located. This, according to the figures of the engineer, would give me the benefit of 4-10 H. P. consumed.

(Concluded on page 370)



Main-Electric-Light

This Beautiful Brilliant Electric Light is made possible by a Main Electric Plant.—Electric Household devices, such as the Electric Iron, Electric Toaster, Electric Percolator, Water Heater, Curling Iron, Sewing Machine Motor, Washing Machine, Churn, Cream Separator and Water Pump, are a few of the conveniences to be had with a MAIN ELECTRIC PLANT.

Power can be had by either electric motor or belt drive from the engine.

MAIN-ELECTRIC-LIGHT makes light available at all hours of the night or day without running the engine. A highly efficient Storage Battery furnishes the electricity, which requires charging but once a week. Power is available for doing other work at the time of charging the battery.—Cost 2 to 3c per day for the average home.

MAIN PLANTS have been in service over Five Years—A seasoned plant—of demonstrated ability.

THE MAIN BATTERY is protected against over-charging—Special control against it.

MAIN PLANTS come in sizes to meet all requirements, 7 light (16 C. P.) at \$76.95; 12 light, 37, 50, 75, 100, 150, 200 and up.

Write for our 80-page catalog and other interesting literature—Today, Dept. P.

MAIN ELECTRIC MANUFACTURING COMPANY, PITTSBURGH.

World's Largest Exclusive Manufacturers of Farm Electric Lighting Plants.

T. BABBITT'S PURE CONCENTRATED LYE

A Domestic Science Expert Says:

"The amount of fat thrown away in the homes which could be made into soap is appalling." You can reduce the cost of living by saving all fat and grease.

Soap making is simple and easy. It takes but little time and your home-made soap is as good as the best, and better than many kinds sold in the stores. Save your waste greases and get some

BABBITT'S PURE LYE

In the new can with the Sifting Pry-off-Top

Your home-made soap will not hurt the hands or clothes when made according to directions with Babbitt's Pure Lye. It is good for everything that any high-grade laundry soap will do. Be sure to use Babbitt's Pure Lye to get best results. The new can is equally handy as a sifter when using a little lye around the sink, in cleaning kettles, cans, etc., or when it is desired to pour out the entire contents as in making soap.

Babbitt's Pure Lye is Highest in Strength but NOT in Price—10 cents Everywhere. Send for booklet just out on Lye, How to Use It, How to Choose it.

B. T. BABBITT
New York City



\$600.00 in Cash Prizes for Boys

A golden opportunity for boys on the farm to prove their mettle and win a prize. Get your boys interested.

There are 1,903,289,600 acres of land in this country. 879,000,000 acres, or less than one-half of this total, is laid out in farms. About one-half of this farm land is cultivated. The balance is waste.

In ten years (1900 to 1910) our cultivated farm land increased in value 118%. The waste lands did not. Yet you know and we know that but a little work would turn this waste into profit.

Almost every farm has its bad spots. Timber, stumps, underbrush, boulders, swamps, gullies, crooked streams, or soil erosion are all foes to farming. Yet all of these things can be remedied. And—once these obstacles are removed, not only does the productivity of the land increase but its value also rises. Its real worth multiplies many times.

Now Here's Our Offer

Pick out an acre of the poorest land on your place. Turn it over to your boy. Let him reclaim it. If it is covered with timber, boulders, stumps or underbrush, let him clear it. If it is swampy, let him drain it. If it has gullies, let him fill them in. Crooked streams? Let him straighten them. Erosion? Let him correct it. There are many ways in which this work can be done. Red Cross Farm Powder is a big aid. But we do not insist upon its use. The way in which the work shall be done is directly up to your boy himself. He can use *any method he chooses*, and if problems arise we will be glad to advise him. Having improved the land it is up to your boy to grow a crop—any kind of a crop he chooses—the only condition made being that the *boy himself must plant, do, or supervise all of the work done on his acre*, and—

To the boys in each section of the country showing the best results we will award a—

**First Prize of \$50.00—Second Prize of \$30.00
Third Prize of \$20.00**

There will be seven sets of prizes—a first, second and third prize in each of the following sections: North Atlantic States, South Atlantic States, North Central States, South Central States, Western States and Pacific Coast States. In case of a tie in any section, each tying contestant will receive a prize.

Additional Prizes

Besides the above cash prizes to winners we will present each contestant receiving honorable mention with a one year's paid subscription to any farm paper published in the United States—contestant to choose paper.

Special Announcement

We are also pleased to announce that the following well known farm papers—American Fruit Grower, The Wisconsin Agriculturist, Farm, Stock and Home, and The Practical Farmer are cooperating with us in this Land Reclamation Contest and are offering other additional prizes to contestants located in their territory. Full particulars will be supplied with regular entry blank.

The Contest Starts At Once

All entries must be received by us not later than January 1, 1917. Reports and records of each acre entered by a contestant will be required. Special blanks are provided for this purpose and will be sent upon receipt of entry blank.

Here is a chance to locate the calibre of your lad—a chance to make him prove his mettle. The experience will give him a bigger, broader view of farm work. It will both instruct and interest him. Outside of his chances of winning a prize it will prove profitable to both you and him. Get him started now. Fill in and send us the coupon today.

E. I. Du Pont De Nemours & Company
Wilmington, Delaware.

Here add any preliminary information you wish to offer.

Name.....Age.....

City.....R. F. D. No.....

State.....

BELIEVING that the reclamation of the waste farm land of this country is a work fraught with great possibilities and worthy the efforts of any one—man or boy—and that the undertaking of this kind of work presents even greater possibilities for the boy in the *making a man and a farmer of him*—and being anxious to know just what the boys in its own particular territory do in the Du Pont Reclamation Contest for Boys—what they undertake and what they accomplish—

The Practical Farmer Offers Prizes to Boys

for the *stories* of their efforts and the results obtained in the reclaiming of one acre of land in the Du Pont Contest. To be eligible for The Practical Farmer Land Reclamation *Story* Contest, boys must live

**IN THE STATES OF PENNSYLVANIA,
NEW YORK, NEW JERSEY,
DELAWARE, MARYLAND, VIRGINIA,
WEST VIRGINIA or OHIO**

To enter the Contest each boy must fill out the entry blank below and send it to The Practical Farmer, to reach them before January 1, 1917, and must have the true story of his work in the Du Pont Contest in the hands of The Practical Farmer by December 1, 1917, on which date The Practical Farmer *Story* Contest closes. Stories are to contain not less than 900 words or more than 1200 words.

For the best manuscripts submitted in its Contest The Practical Farmer will give the following prizes:

**A First Prize of \$25.00
A Second Prize of \$15.00
A Third Prize of \$10.00**

and to each boy submitting a manuscript worthy of honorable mention will be given a three-years subscription to The Practical Farmer.

In case of a tie for any prize the same will be divided among the successful contestants therefor.

Boys, fill out the entry blank below and mail it at once. On receipt of it The Practical Farmer will send you full particulars regarding the Contest and you can get to work at once, to win one of the prizes.

Don't think because January 1, 1917, is some time off that it is too early to enter right now—it is none too early to begin planning your work today. Your plans should be all made before the snow flies and you should get a lot of the reclamation work done during the early winter in order that you may raise successful crops next season—for the crop raising also counts in the competition.

Fill out this entry blank and mail it today

ENTRY BLANK

(Date).....1916

The Practical Farmer, P. O. Box 1321, Philadelphia.

Please enter me in your Land Reclamation *Story* Contest. My age is years.

(Name).....

P. O. R. F. D. State.....

The Practical Farmer Live Stock and Dairy Section

EDITED BY W. H. TOMHAVE

Feeding Dairy Cattle

By D. T. HENDRICKSON

Winter isn't very far away, and progressive dairymen will soon begin to plan the rations for their cattle. Director Bennetsch, of the Sussex County, N. J., Farm Bureau, says it does not pay to feed cheap grain feeds, that is, feeds low in digestible protein, which are usually purchased for less per ton than the higher grades of feeds. The value of a feed for producing milk is measured absolutely by the percentage of digestible nutrients, particularly protein, which it contains, and its palatability. The cheap grades of feeds are manufactured because they can be marketed at a good profit and because many farmers want them. Dealers handle them because farmers demand them. These cheap feeds sometimes contain sweepings and other worthless material to make weight, all treated with molasses to make them palatable. Many of them contain about 16 to 18 per cent. of total protein, much of which is not digestible, and is worth as much as the same quantity of straw. The amount of digestible protein is low, about 75 per cent. of the total. Dry brewers' grains contain 20 per cent. of digestible protein and are worth about \$25 per ton. One hundred pounds contain 20 pounds of protein, all of which is available to the cow. At \$25 per ton, this costs 6¼ cents per pound of digestible protein. A feed which contains 16 per cent. total protein contains about 10 to 12 per cent. of digestible protein and sells for about \$23 per ton. The 10 pounds of digestible protein in this feed costs \$1.15, or 11½ cents per pound of digestible protein—almost twice as much as in dry grains. Milk cannot be made without digestible protein. If the supply of protein is limited, the milk produced will be limited to the producing capacity of the cow. Because cows produce well on a cheap grade of molasses feeds is no reason why they will not produce more milk and at less cost if fed a higher grade of feeds. Before purchasing feeds determine the percentage of digestible protein and figure the relative cost of feeds. A mere comparison of ton prices means little.

My experience has taught me that there are no hard or fast rules to be followed in feeding cattle. The amount of roughage fed is about two-thirds of the entire ration and the grain one-third. When our cows first freshen they are fed lightly and as they come to their milk flow the grain is gradually increased. The increase is kept up so long as the cow returns a profitable flow of milk for grain consumed and does not go beyond the danger point in feeding, which is 15 to 18 pounds of grain per cow per day. When the cow has reached her maximum production then the grain is reduced a little in order to make sure that not too much grain is being fed. It may be said that cows producing more than 25 pounds of milk per day will not require quite as much feed per pound of milk as cows producing less, for no matter how much milk a cow produces the maintenance ration must be supplied, which is a large portion of the entire

Jessie Fobes Bessie Homestead 100742
A Holstein-Friesian cow that brought \$4600 at the Detroit sale last June. She has five 7-day records (3 under full age) averaging 29.54 lbs. butter, best record 34.56 lbs. This and her 30-day record of 142.26 lbs. were world's records when made.



ration fed to the cow. As the cow decreases in milk flow the grain is decreased accordingly. When the cow is dry, if she is in good flesh, no grain is given, but she is fed a good quality of roughage, such as clover hay and corn silage. There is nothing like knowing the amount of grain and the amount of feed fed every day to determine when the greatest returns, or the most profitable returns, are being secured. The milk sheet readily indicates whether the cow is receiving all the grain she should have, whether she is properly milked and cared for, etc. If it does not seem advisable to weigh the milk each day I would urge that it be weighed at least once a week. This is the only real way to weed out the "boarders."

More New Jersey dairymen have erected silos this year than in any single previous year. This, too, in spite of the fact that many people still hold that corn fodder furnishes one of the best of foods for dairy cattle. Accurate tests prove, however, that the same corn acreage preserved in the silo will yield more milk. At the New Jersey Station a few years ago they found that when they put corn in the silo the average cost was \$11.22 per acre, the corn yielding 11 tons of green forage to the acre. When other acres in the same field were cut, shocked, stored and later run through the feed cutter a yield of 4 tons of dry unhusked fodder was obtained at a cost of harvesting and cutting of \$10.31 per acre. When these two roughage feeds were fed to dairy cows the daily milk average was increased from the silage feeding. The cows were fed 10 pounds of grain daily, consisting of wheat bran, dry brewers' grains, corn meal, and linseed meal. This grain ration was given to both lots, to those fed corn silage and to those fed corn fodder. The corn silage cows were given 44 pounds a day in addition to the pounds of corn fodder in addition to the grain and the corn fodder cows 14.3 grain. The daily average for each cow in milk was 23.7 for the corn silage lot

and 21 pounds for the corn fodder lot. Here is a yield of substantially 13 per cent. more milk daily from the silage cows than from the dry fodder corn cows. This test is a convincing proof of the value of corn silage.

In addition to brewers' grains, mill feeds, roughage and silage, the value of alfalfa hay still remains to be considered. Alfalfa hay contains 11 per cent. digestible protein, produces 2 to 5 tons of hay per acre per year for 3 to 10 years; leaves the soil richer, and is the greatest roughage for dairy cows. Timothy hay contains 2.8 per cent. digestible protein; produces ¾ to 2½ tons of hay per acre for three or more years; leaves the soil poorer and is one of the poorest roughages for dairy cows. In localities where the dairyman is obliged to purchase feeds, a large percentage of his income from the sale of milk goes out in the purchase of protein feeds. Protein is absolutely necessary to produce

kill out the weeds and supply needed fertility. Alfalfa is not difficult to grow. Those who have grown it successfully are enthusiastic. Let all dairymen grow alfalfa, feed silage, use scales and then see if they think the business a failure. My guess is that they will all say that they will engage in the business on a larger scale than ever.

New Jersey.

Hogging Down Corn

In the East the practice of allowing the hogs to harvest the corn crop is looked upon as a wasteful method of feeding. This is not substantiated by experiments, however, as those conducted at the various experiment stations, especially Iowa, Minnesota and Pennsylvania, indicate that it is a more profitable way of producing pork than dry lot feeding. In each case where comparison has been made of hogging down corn and feeding in the dry lot by hand, better results have been secured where the hogs harvested their own corn.

This is something that should be more universally practiced by farmers in the East. It has several marked advantages that make it a desirable method of pork production. In the first place, it saves the labor of cutting and husking the corn which is usually quite an item, especially during the fall when the swine are fattened. It also makes it possible to utilize all the corn, even that which lies on the ground. No hired man ever picked corn as clean as hogs in the field. It is also a means of increasing the fertility of the soil, as everything excepting the increase in weight goes back on the land. There is no loss from leaching as is bound to take place where yard feeding is followed. The swine will relish corn in the husk to a much greater extent than where it has been husked and becomes dry.

It is a desirable practice to use only a small portion of the field at one time. If the hogs are allowed too large a space, there is bound to be some waste. A good plan is to use about one-half acre for each 12 to 15 hogs to be fattened. They should be kept in this tract until most of the corn is consumed, after which they may be moved to a new field and brood sows or stock hogs allowed to follow the swine that are being fattened, and these will consume any corn that may be left on the field. In this way there is no loss whatsoever. It will be necessary to provide temporary enclosing fences unless the field is surrounded by a permanent fence, in which case only cross fences are required. It does not take very much of a fence to turn hogs when they are in the corn field. A few temporary posts and 26-inch woven wire are the only materials necessary. The bottom of the wire may be fastened to corn hills at intervals, and there will be no difficulty in keeping the swine within the enclosure. This fence can be moved whenever they are changed to a new lot. The best weight at which to turn hogs into the corn field is from 105 to 140 pounds. Hogs of this weight will make the best gains and utilize the corn crop to the best advantage. To get the best results from feeding corn in this way, it must

be supplemented with a nitrogenous feed of some kind, such as tankage or a leguminous forage crop sown in the field. If tankage is fed, it should be at the rate of about 1/4 pound per head daily.

There are many farmers who have not tried this method of fattening swine who will do well to give it a thorough trial. It is being universally practiced in many sections of the corn belt, and those who have started it would not go back to the old method of feeding corn.

The Farm Boys' County Hikes and Camps

(Concluded from page 355)

written, about ten days before starting time, to all the boys in the various counties who had previously been enrolled as club members. Those who had grown an acre of corn or potatoes or who had raised a pig, calf or poultry or had excelled in the county stock judging contests, were eligible. The letter to these boys contained the itinerary program previously mentioned and a return postal card for enrollment. A set of rules and regulations was also provided, including such points as a 13-year age limit; the equipment each boy should have, such as a pair of heavy shoes (but not new ones), three pairs of heavy woolen socks, one rubber blanket, one pair of heavy, dark woolen blankets, one change of underwear, soap, drinking cup, knife, fork, spoon, a tin plate, comb, towel, safety pins, tooth brush, jack knife, a mirror, a baseball glove and ball, a swimming suit and a good disposition. No matches, firearms, smoking or profanity were to be allowed. Strict obedience to the leaders in charge was imperative. Each boy was to provide one dollar to pay for the food supplies purchased for the hikes. Camp charges amounted to one dollar per day or were rated according to the actual costs. All funds remaining were returned proportionately to the boys or else applied to the club treasures, according to the wishes of those concerned. During the hikes all bundles were to be carried by the motor cars provided by the respective County Extension Representatives.

For one week prior to the hikes and camps the local papers presented publicity articles commenting upon the plans and encouraging parents and young people alike to support the movement.

While on the road there were a few uniform rules to be observed. All were to arise between 5.30 and 6 A. M.; cook, fire, wood, water and supplies committees were appointed daily, grace was observed at each meal; all were to be courteous one to another, and every one was to be quiet or asleep in the straw mow by 9.30 P. M. During the hikes the boys walked about 15 miles per day, while shorter hikes were taken by the camp boys to neighboring farms.

During the course of events the boys visited orchards, dairy, beef, poultry farms, industrial manufacturing institutions, etc., and learned innumerable practical lessons from the progressive farmers who had lifelong experience in their respective farming enterprises. While visiting one of the fruit farms the proprietor explained to the boys his methods of low, open-head pruning, of peach picking and ways of handling delicate fruit. Spraying practices throughout the year, soil cultural methods, fertility problems and methods of propagating the peach and other fruits were also explained. Specimens of brown rot, peach yellows, tent caterpillar work and the destructive effects of various other insects and diseases were observed and plans for their eradication were taught.

While at the dairy farms the boys studied the operations of the milking machines, noted how old, dark and tight overshot Dutch barns were remodeled into modern light, clean and well ventilated dairy barns with comparatively little expense. On practically all of the dairy farms the boys noted that cleanliness and efficiency, supplemented with adequate but not elaborate equipment and good stock under thorough management, together with the best methods of crop production, were the principal elements of success. In practically every case where a successful farmer was visited the most prominent factors in the owner's personality were his pleasure in doing intelligent hard work, keeping everlastingly at it with enjoyment, his love and consideration for his stock and the love of a true home life. At one of the Brown Swiss certified dairy farms the boys saw three men feed over one hundred cows in less than four minutes, which was quite a labor saving feat. A modern milk house was being constructed on still another farm and here was seen how the milk, after coming from the stables, was weighed, aerated, clarified, pasteurized, cooled and bottled ready for retail delivery. A creamery was visited to study and observe the operations involved in milk separation, cream ripening and butter making.

While at one of the general farms, the owner demonstrated to the boys various labor saving machines. He first had three horses hitched to a manure spreader which he drove for some distance while topdressing a piece of grass land. From here he took his team to a 2-row riding cultivator; then to a hay loader and finally demonstrated the use of a 2-bottom gang plow and a wide span harrow. All of these machines were saving the labor of one man and thus proved to be very economical, especially during the present scarcity of farm hands.

At the farm of a prominent alfalfa grower the alfalfa crop was studied from the standpoint of drainage, inoculation, lime, fertility, good seed and proper cultural methods. The nodules on the roots of this legume, containing the bacteria which gather nitrogen from the air, were observed. The proper time to cut, as indicated by the presence of the small shoots at the crowns of the plants, was also impressed upon the minds of the pedestrians. On several occasions horse breeders were visited, where the owners explained to the boys the desirable type for a farm draft horse. While at the live stock farms, the young farmers learned the value of good blood in sires to head the various herds of the state. On one farm the question of soil fertility had been partially solved by the construction of a pit to conserve the liquid manure which drained from the stables and yard. The liquid manure was later pumped from this pit and sprayed over the grass land.

A specialized poultry farm was the center of attraction on several of the boys' hikes. The mammoth incubators of 30,000-egg capacity, the brooder and laying houses, colony houses and various sanitary and labor saving devices all proved extremely interesting and instructive.

The specialized pig farms of several counties offered many interesting lessons to the boys. Economic feeding systems were explained and the proper type of lard hog for the Pennsylvania farms was a point of thorough consideration. A large and modern packing house was visited in one county, where the hikers had the privilege of seeing the operations involved in this industry. Several industrial plants were also visited where the manufacture of woolen goods and overalls was seen. At another

place the making and commercial mixing of fertilizers was studied.

During the early morning hours and at resting periods, lessons were taught in rope halter making and in making various forms of knots, hitches and rope splices. Games were enjoyed occasionally along the way to add a keener interest and pleasure to the entire occasion. Each evening camp fire meetings were conducted, when prominent men of the various counties addressed those present. County superintendents of schools, lawyers, bankers, teachers, preachers and other leaders of men and boys were prominent on these programs. Singing around the glowing embers made the affairs thoroughly enjoyable.

The hikes and camps have become permanent features in boys' club work in Pennsylvania, and their benefits and advantages are self-evident. In future years they will no doubt be popular over the entire state, so that farm boys everywhere will have these experiences and educational opportunities.

The Dairy Cow With a Limp

GEORGE H. DACY.

When the dairy cow limps and walks with difficulty, when her leg above the hoof head is hot with fever and swollen, when a fetid odor comes from between the cleft of the hoof, the chances are that the cow has a case of foul in the foot. Recently I have successfully treated several cows afflicted with this ailment. The trouble may come from the animals standing on concrete floors without wooden overlays; from the toes being too long; from the cows being kept in filthy quarters where they are standing in manure much of the time, or from the foot being bruised on a rock, nail or wooden stub.

I find that it pays to trim the toes of the lame foot with a saw or chisel if they need attention. Then I soak the foot in a pail of hot water to which one tablespoonful of creolin to each quart of water has been added. After the foot is thoroughly clean I saturate a strip of clean cloth with pure creolin and I draw it backward and forward between the toes, using care not to blister the skin above the hoof head with the disinfectant. I then soak a little clean oakum in creolin and place it in the fissure between the toes. I follow this with alternate layers of oakum and pine tar until the space between the toes is packed full. I turn the cow into a pasture which is high and dry, so that her lame foot will not be exposed to further infection. I continue this treatment each day until the cow is well again. My experience has been that if the disease is taken in time, before abscesses begin to form, this treatment is effective.

Whatever you do, don't follow the advice of some farmers, who will tell you to yank a piece of half-inch rope backward and forward between the toes of the lame foot. Such abuse of the inflamed hoof will prolong the disease consequent on the added irritation. It will promote radical infection and the formation of serious abscesses. Naturally it will cause the animal to fall off in milk production. An ounce of common sense is worth an ocean of regret in the home doctoring of sick dairy cows. The farmer who favors the rope treatment, and the man who believes that foul in the foot is a contagious disease capable of being transmitted from cow to cow are decidedly wrong. The foot foul condition is always local with the individual animal, although there may be predisposing causes such as filthy stables or unprotected floors which may favor a number of animals in the same herd having the ailment at the same time.

Virginia.

Make Your Pigs Spell



You have earned big profits when you raise a pig to market weight. You lose much of this profit when you sell hogs on the hoof. Send them to market as country lard and sausage and get every cent that's coming to you. You'll need an

"ENTERPRISE"

Sausage Stuffer and Lard Press

to stuff sausage and make lard easily. Special features in the "Enterprise" Press: Patented Corrugated Spout stops all air from entering the casing and prevents spoilage. Cylinder bored true and plate can't jam or crack. The wide lips on the strainer make it safe to handle. Long handle makes quick, easy turning. 9 sizes and styles—2 to 8 quarts. Japanned or tinned.

4 quart size, Japanned, price \$6.00

When you chop sausage meat use the

"ENTERPRISE"

Meat-and-Food Chopper

The "Enterprise" four-bladed, razor-edged, steel knife, in contact with perforated steel plate, cuts meat and other food and doesn't mangle, tear or squeeze out the rich, nourishing juices. A big help also to the housewife in making appetizing dishes from food left over.

No. 12 Chopper, cuts 3 pounds per minute, price \$2.50.

No. 22 Chopper, cuts 4 pounds per minute, price \$4.50. 72 styles and sizes.

Your dealer can supply you. Look for the name "Enterprise"

This Hog Book Means Money to You

It tells how to raise hogs and prepare them for the market, so as to get every possible profit. Send for it in stamps for "How to Make Money with Hogs" by F. D. Coburn, former Sec'y of the Kansas Dept. of Agriculture. New Book, "The Enterprise Housekeeper," containing 500 tested recipes and household hints and how to prepare dainty, delicious dishes for all meals. Sent for 4c in stamps.

THE ENTERPRISE MFG. CO. OF PA. PHILADELPHIA

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Electricity on the Farm

(Concluded from page 357)

equal he will pay a little over 10 per cent. more than Mr. Brown for his lights—and get more light.

The computation of electric light costs becomes more complicated also, if the gas engine which drives the dynamo is used for pumping at the same time. In several equipments inspected by the author this arrangement was used, and in each case the time required for pumping water was considerably longer than that needed to charge the battery. One man said: "We run the engine about twelve hours a week to pump water, and keep the dynamo on about half the time." In this case a 5 H. P. gas engine was used, the dynamo taking about 1 1/2 H. P. when charging at the full rate. No one knew just what horse power the pump required—the engine was heavy enough to do both jobs at the same time without, as the owner said, "using any extra gasoline to speak of." And that was the story almost everywhere. No one charges up a man's time against the lighting system—it requires little care, and besides, it saves so much time that all the chores can be done easily with more than enough margin to look out for oiling the engine and filling the gasoline tank. You can take the author's word for it, gentle reader, trying to get exact operating costs on a farm lighting set is a hard job. The average farmer is not trained to keep exact costs as do manufacturers. Give him an opportunity to try out a proposition—to give it fair, normal every-day service—and he will tell you infallibly whether or not it is a paying proposition, and whether he is satisfied or otherwise. The country is full of farmers who will tell you that they are pleased and satisfied with their electric lights, and that they cost very little, but who can only scratch their heads and make wild guesses if you press them further.

In one way, however, we are able to shed a little light on the subject. A number of manufacturers have installed lighting plants on convenient farms and have then "kept tabs" on them as accurately as possible. Their records form a more or less satisfactory basis upon which to figure running expenses, even though they vary from 5 to 50 cents a week in many cases. Probably both the maximum and minimum amounts are correct, although it is not likely that the average expense is as low as 5 cents. After investigating the subject to the best of his ability the writer is willing to hazard, as an educated guess, that the running expense of a 30-volt plant of about 1 1/2 H. P. capacity is between 15 and 25 cents a week.

The equipments shown in Fig. 1 and Fig. 2 are of this size and voltage, and are of a type which seems to be popular for general farm use. In Fig. 1 a counter-shaft is provided, and the family washing machine can be seen belted up and ready for use. The counter-shaft is long enough to extend through a partition at the other end of the room, into the dairy, where it is used to drive a separator and some other devices. Unfortunately the dynamo cannot be seen in this picture. It is hidden by the tank which is in the center of the picture and which contains water for cooling the engine cylinder. Fig. 2 shows a combination lighting and pumping plant, such as Mr. and Mrs. Conley used on their farm described in the last article. Only the top of the dynamo can be seen in this picture; it is on the floor just behind the switchboard. In this place, as in many others, the time required each week for pumping water is longer than is needed to put a full charge in the bat-

tery, so that the dynamo only works half as long as the gas engine.

An electric equipment like this is a good, sound, practical and desirable addition to any farm. There is probably no other small investment open to farmers which brings such good returns. Not only does it pay dividends in money saved, and human energy conserved; it also carries premiums such as convenience, cleanliness, reliability and freedom from fire risk. An electric light plant makes the whole farm more valuable.

In concluding, a few words of advice may well be offered to prospective purchasers. First make out a list of the lights and of the different machines you want to drive with motors. Then make a rough map, showing the distance between house and outbuildings which are to be lighted. Decide where you want to put the engine and dynamo. Then send this information to several manufacturers of farm lighting sets, or have their salesmen call. Some one of the available equipments is exactly what you want, and it will interest you to hear about the others. Finally, when you have decided what to install and place your order, follow to the letter all directions in regard to setting up and operating. These are simple rules; they do not sound like anything of great importance, but they are the boiled down experience of the manufacturer and point out the shortest and easiest road to complete satisfaction.

Feeding Farm Colts

It is not unusual at this time of the year to find a large number of good spring colts on the average farm. The same thing is true at nearly all the county fairs of the country. If a person had paid a visit to these farms or fairs a year ago he might have found the same condition to exist. This being the case, you would naturally expect to find an equal number of well developed yearlings and 2-year-olds unless they had been sold in the meantime. One usually does find the same number of yearlings in the hands of the farmer as he had colts the previous year, but so badly developed and in such poor condition that there is no market for them. This brings up the question as to why there is such a change in the colts during the first year of their growth. A fair estimate of the gain that a colt should make during his first year is one-half of his normal or mature weight. Unless he does this, it is not likely that he will be fully developed when he reaches his maturity, and thus will never be as useful to his owner as a colt that is well grown out during the first year.

In many cases the spring colts are not cared for during the winter as they should be, especially in the matter of feeding. They get a good start as suckling colts by being allowed to run with the mares until they are from five to six months old. In addition they usually have the run of some good pasture lot and some one feeds them a little oats to keep them "coming." Unfortunately, this special care and treatment are not extended for a long enough period. After the colt has been weaned, he is usually expected to "rustle" for himself and the result is that he finds it difficult to supply his wants. There is no way in which feed can be used to better advantage than by feeding it to the colt during his growing period. Instead of being turned out to a straw pile or allowed to graze on an old pasture field, the farm colts should receive a liberal allowance of good farm feed of a character that will produce growth. It does not require a large amount of grain to keep them in

good, growing condition. A grain mixture of equal parts of corn, oats and bran, supplemented with some good mixed or clover hay and a little silage, makes an excellent feed for colts. The amount to feed will depend upon the individual colts, but it should be in sufficient quantity to keep the colts well all the time. A small allowance of good alfalfa hay can also be fed to advantage. The colts should be turned out for exercise and may also be expected to do a little hustling for themselves, but not to an extent that it will retard their growth. It is not only a bad thing for the colts to have their growth checked during the growing period, but it is an expensive proposition for the owner in the end. Well fed colts will develop greater ultimate size than colts not properly cared for: d consequently will be worth considerably more money when matured. Another factor to be kept in mind is that colts that are properly developed can usually be worked at an earlier age than those that have been constantly underfed since they were weaned. Beside the advantage of having a better horse through good feeding, the farmer will take more pride in the good horse or colt than he will in the one not properly developed.

If you can possibly arrange to get there don't miss the National Dairy Show at Springfield, Mass., Oct. 12 to 21. It will prove a help and inspiration to every farmer attending.

FREE to all owners of cows

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THIS book was written for the man with only two cows just as much as for the man with twenty. In it has been gathered together a great fund of valuable information on subjects which are of vital interest to every cow owner. And while the various phases of dairymaking are treated by the best and highest authorities, it is not a technical treatise but is written in plain every-day language so that even the children can understand it. Here are just a few topics that will give you an idea of the practical nature of its contents:

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"Year Around Feeding of Dairy Cows"—by an authority whose advice is well worth heeding. The importance of proper feeding deserves more attention from every cow owner.

"How to Judge a Dairy Cow."—shows by illustrations what points to look for in a dairy producer—explains the essential qualifications of a good dairy cow.

Then there are splendid articles on "Alfalfa," "Ventilation of Dairy Barns," "Breeds of Dairy Cattle," "Improving the Herd with a Good Bull," "Care of Freshening Cows," "How to Test Cows," etc. Numerous dairy rations, suitable for various sections of the country, are given, and various milk and dairy tables as well as tables of weights and measures, also capacities, etc. that every farmer has occasion, at some time or other, to refer to.

Thousands of dollars have been spent in the preparation of this book, and if you keep cows you certainly ought to write for a copy and read it from cover to cover. The book is absolutely free. Just fill out the coupon or send the information requested on a post card, mentioning this paper.

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LET US TAN YOUR HIDE.

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The Crosby Frislan Fur Company, 711 1/2 Ave., Rochester, N. Y.

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Our Experience Pool

(Concluded from page 365)

tinually, and upon the assurance that such a development was practical, I decided to go ahead with the improvement, considering the low cost of operation of a water-driven plant a big item in my favor.

To develop this power a small steel overshoot wheel 12 feet in diameter by 1 foot in width, was used, the shaft of the water wheel resting upon bearings placed upon concrete walls built for it. From a point 500 feet up stream where I placed a low concrete diverting wall to turn the water into the open ditch, the water was carried to the wheel through an open ditch and pipe, using a wood pipe 6 inches inside diameter, the shell of the pipe being 2 inches thick. With the stream flowing through this pipe it was filled to a depth of 2 1/2 inches in low water.

Beside the water wheel I built a frame structure to house the gearing and dynamo, this building being located about 400 feet from my house. I used a 250-watt dynamo, speed 900 revolutions per minute, 45 volts, mounting it well above the floor of the building to keep it protected from any moisture. To drive the generator I used a 2-inch balata belt, driving from the pulley on the counter-shaft.

On account of the small amount of power possible in my case, I had to use a storage battery so as to be well supplied with current at all times. As my power cost me nothing, my idea was to allow the water wheel to run continually, always keeping the battery charged full, and using the surplus current for electric fans, irons or extra lights.

Instead of placing my battery at the water wheel, I placed it in a small workshop adjoining the house, protecting it from the weather and from interference from outside parties. It is a 16-cell 80-ampere battery in four trays, complete with switchboard. All necessary meters are mounted on the switchboard, so that I can tell at a glance just how my supply of current stands.

I have the house, barn and other buildings six in number, besides having a number of outside lights, and have had an abundance of light at all times. In addition to the lighting, all ironing has been done by electricity, as well as electric fans for the house and cold storage warehouse have been in operation.

Since the installation of this plant, about a year ago, it has cost me nothing for operation, and I have had all the light needed at all times. Practically the only attention which has been paid to the plant has been the oiling of the water wheel bearings and the dynamo, with occasional renewing of lamps.

A. T. C., Hyde Park, N. Y.—About twelve years ago I fitted out my home with Angle lamps. I did this through the recommendation of our lamented friend—Mr. Terry. I thought if he favored them they must be pretty good, and I find they are. They surely have surpassed my best expectations. Their light is so agreeable to the eyes, I think no other light can compare in this respect. About all my life I have been sorely troubled with weak eyes and I well know the advantage and pleasure of having a mild and agreeable light. My eyes have greatly improved since using these lamps. My lamps never smoke and never smell at all. They burn kerosene on a different principle from other lamps. The obnoxious smoke that some lamps send out is all consumed in mine, and this makes the oil go fully twice as far.

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No. 10, the latest model of our popular Horse Shoe Brand Wooden Pump. The pump that is more easily operated and repaired than any other. Superior to the old log pump and the "Old Oaken Bucket," and with none of the objectionable features of iron pumps.

When repairing is required—though seldom necessary—you can do the work yourself without removing the pump from well.

It has a 7" x 10" head, closed brackets to keep out sticks and stones, long stroke, 3" and 4" porcelain-lined cylinder with brass bucket fitted with best leather cups, and removable brass check valve, with brass seat. It is adapted for wells 10 to 50 feet deep.

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Baltimore, Md. U. S. A.

The Women's Exchange

(Concluded from page 364)

comfortable house in winter as follows: The kitchen, which is large, is supplied with a range for cooking and baking purposes and is heated sufficiently by it. We were careful when buying the range to select one which would require the least possible trouble to keep clean and polished, and would give the best results from the amount of fuel used. To avoid the extreme heat in summer a dependable oil stove is used.

To heat the dining and living rooms we use a hard coal burning heater. An extra pipe is connected from hot-air outlet in top of the stove to a register in the floor above. This way two rooms which communicate on the second floor are also made comfortable. The heater has a roller-bearing grate so that with very little effort the ashes can be removed, also a large self-feeding magazine which supplies the fire with sufficient coal to operate the stove from 24 to 36 hours without refilling. It is built with a view to saving fuel. A tight covering over the top affords a double protection from escape of gas.

On extremely cold days a small coal oil heater is lighted in the bed room if we care to do some work in it during the day; otherwise the register is sufficient, as we sleep with open windows at night.

Mrs. J. W. C., Newark, Del.—The best and cleanest mode of heating a house is undoubtedly the method my father used—the hot-water system. Most farmers, however, object to putting a furnace in the cellar, because of spoiling it for use as a root cellar. If the cellar be large enough it may be divided advantageously into two spaces, one for the furnace, the other for roots. Or one may have a separate root cellar dug outside in some convenient place.

One can heat the house very well with stoves, where the pipes are run through the second story and large drums put in for heating the bed rooms. Stoves which will keep a fire in all night make for greatest comfort.

If one has plenty of wood and a room with an open fireplace, there could be no more cheerful spot. But when not in use the chimney opening must be closed or unlimited cold will come in.

The hot-air furnace is better than stoves, but will dry the air more than the hot-water system, and sometimes will not heat a distant room well. The hot-water pipes distribute the heat evenly. It will take longer to get up to the desired temperature, but it will hold an even temperature with less bother for a greater length of time than will the hot-air. As for the cost—well, why is it that the farmer with the most money in the bank complains most about expense?

Mrs. E. A. B., Delevan, N. Y.—It seems to me that on farms in this section a good Round Oak heater for the sitting room, with plenty of hard-wood chunks for the same, is as satisfactory and economical as more elaborate methods of heating medium size farm houses, with a good range cook stove in the kitchen and the stove pipes helping to heat the chambers, and a register over the sitting room stove, most farm houses are comfortable for the family; and if at times more heat is needed for guest rooms a kerosene heater is quickly lighted and satisfactory. Some object to wood as fuel because of dirt and work of tending fires, but with ordinary care one need not have much dirt, and a good sized wood heater does not need much care other than the men folks can give it at meal times, and as for cooking I prefer wood to other fuel. On most farms here the cost of wood is only in the work of preparing it, as there is always timber blown down and old rails and posts that can be cut up.

Information for Sheep Men

Because of the present interest in sheep raising in the East, the Pennsylvania State College School of Agriculture (State College, Pa.), calls attention to a pamphlet prepared by B. O. Severn, of the department of animal husbandry, covering experiments to determine maintenance rations for breeding flocks of mutton and wool sheep. The edition of this pamphlet is limited. Those interested in the subject should send for it.

Jerseys Travel in State

To give the farmers and breeders and the consumers of milk from Iowa to Massachusetts an idea of what the country's best Jersey cows look like, and to advertise the magnitude and importance of the dairy industry, the American Jersey Cattle Club will run a "Jersey Special" train from the National Dairy Congress Show at Waterloo, Iowa, to the National Dairy Show at Springfield, Mass.

This remarkable train, consisting of ten Arms palace cars and four Pullmans, will leave Waterloo on the night of October 8th, carrying the pick of the Jersey cattle of nine states in the West, Middle West and Southwest, escorted by breeders and Jersey cattle men of prominence throughout the country.

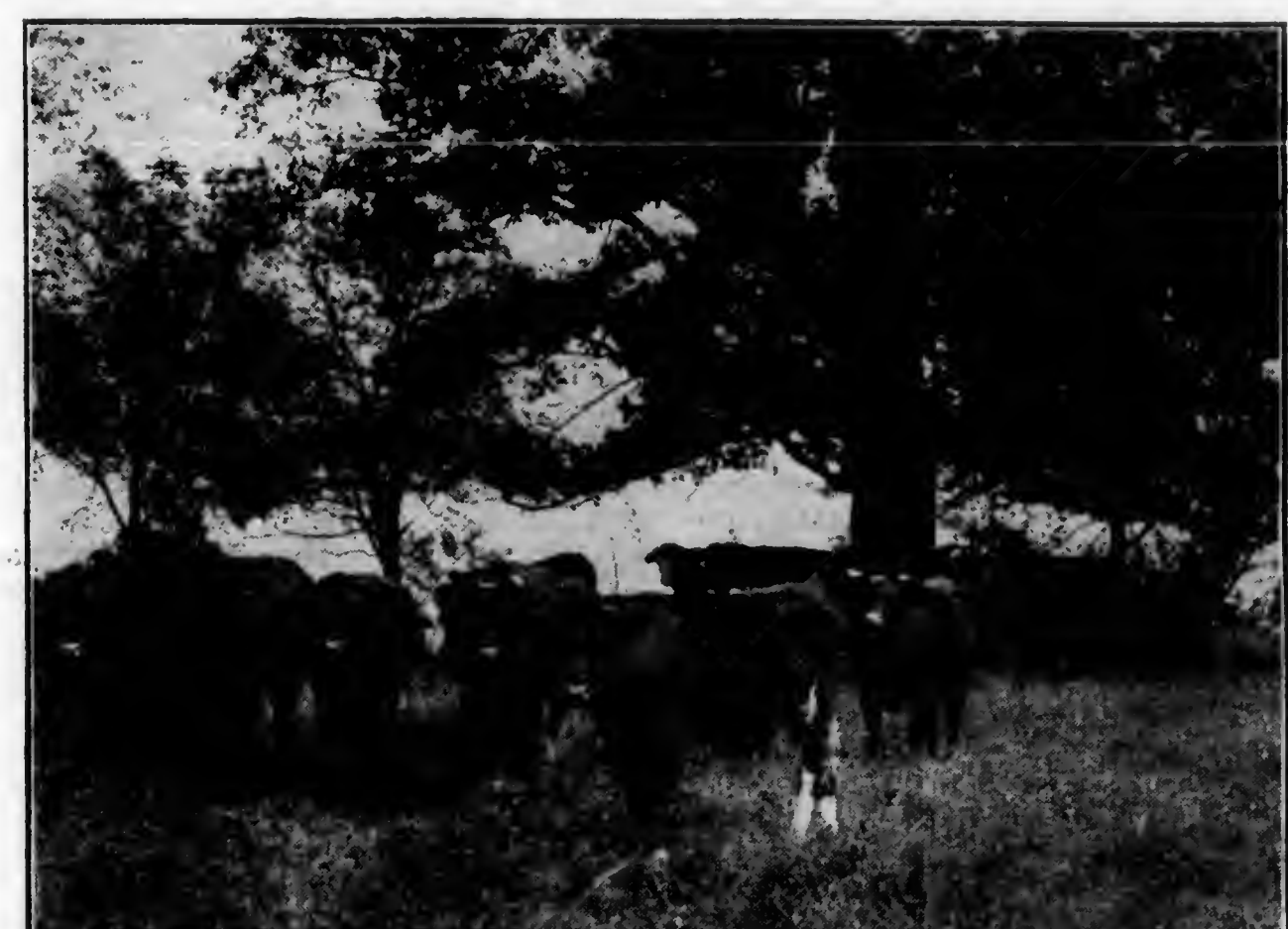
Enroute three stops will be made—at Indianapolis, Columbus and Utica—each of these cities being the center of a great dairy section; in each a big dairy celebration will be held, comprising a parade, banquet and addresses. It is expected that governors, mayors and other dignitaries will attend and speak at these several celebrations.

The "Jersey Special" is due to arrive at Springfield on Thursday, October 12th,

to 125 pounds they will be getting a mixture of 8 to 10 parts corn to one of tankage. A mixture of 10 parts corn and 1 part tankage is recommended as a good grain ration for brood sows. For fattening pigs, the ration recommended is made up of 12 to 15 parts corn to 1 of tankage. If pasture crops are available for swine, a wider ration is recommended in almost every case.

Trouble with Belgian Hares.—R. J. H., Pennsylvania, writes: "My boys have been raising Belgian hares for the past year with fairly good success, but are up against it now and would appreciate your opinion of the case. This morning they found two out of a pen of four, about four weeks old, which were dying. Upon examination they were literally rotten between the hind legs, there being a hole about the size of a quarter on the belly between the legs, through which the intestines protruded. It was not a wound such as an animal would make, but seemed to be caused by decay. Yesterday they were apparently all right. I have been fed lightly on corn and oats chop, bright clover hay, carrots, etc."

This is a very peculiar condition to occur in any animal. We cannot understand it, unless there was original hernia (rupture) and the skin of the sacs became injured and sloughed. All that we can recommend is very careful attention to sanitary conditions, and disinfection to the parts in any animals that show abnormal conditions, such as dressing three times daily with a 5 per cent. solution of one of the coal tar disinfectants and a short time after the dressing (say 10 minutes) dusting with 1 part iodoform to 6 parts boracic acid. If any more show indications of the



A Fine Herd of Short Horns on a Kentucky Farm

where another celebration will be held and the "Flying Jerseys" will be escorted to their quarters in the dairy barns of the National Dairy Show which will open its ten days session on that day.

As a clever advertisement, both for the dairy industry in general and for Jersey cattle in particular, the "Jersey Special" is considerably ahead of any thing we have heard of heretofore, and the American Jersey Cattle Club deserves much credit for its enterprise. We trust that a great number of our readers will see the country's best Jerseys, either on their flying trip from Waterloo to Springfield, or at the National Dairy Show. The show promises to be one of the greatest ever held and such of our farmers as can arrange a trip to it will be well repaid for their expense and time.

Queries Answered

Tankage for Hogs.—R. N. H., Pennsylvania, writes: "Do you recommend tankage for hogs? In what proportion to other feeds would you feed tankage?"

Tankage is one of the best protein feeds available on the market. It is recommended for all classes of swine. For young growing pigs it is usually fed in combination with corn meal and shorts. A mixture of 4 parts corn meal, 2 or 3 parts wheat middlings and 1 of tankage is considered an excellent combination. As the young pigs increase in weight the amount of corn meal is usually increased and the shorts decreased so that when the pigs weigh from 100

same trouble it will be wise to call in your veterinarian or take the patient to his infirmary for examination.

Brittle Hoofs.—C. S. W., Ohio, writes: "Horse has dry, hard, brittle hoofs, breaking out so that there is scarcely any foundation to rest a shoe. What can be done to strengthen hoofs, and to stimulate growth of healthy horn?"

Get an ointment made of 1 dram of powdered cantharides mixed with 1 ounce vaseline. Clip the hair off the coronets for about 1 1/4 inches above the hoofs. Rub a little of the ointment well in once daily. When this has blistered the parts cease the application of the ointment and apply sweet oil daily until the scale comes off. Then apply the ointment again until it again blisters, which will be sooner than at first. Keep up this constant irritation to the coronets, and in addition supply moisture to the feet at nights by applying poultices or packing the feet with clay, linseed meal or other substances that retain water.

Live Stock and Dairy Prizes

We have awarded prizes for articles on live stock and dairying contributed by our subscribers and published by us during the month of September as follows:

First prize (\$6.00) to John Underwood for his article, "Breeding and Feeding for Dairy Purposes," which appeared on page 339 of our issue of September 15th. Second prize (\$4.00) to Hugh Fergus for his article, "The Sow at Farrowing Time," published on page 333 of our issue of September 1st.

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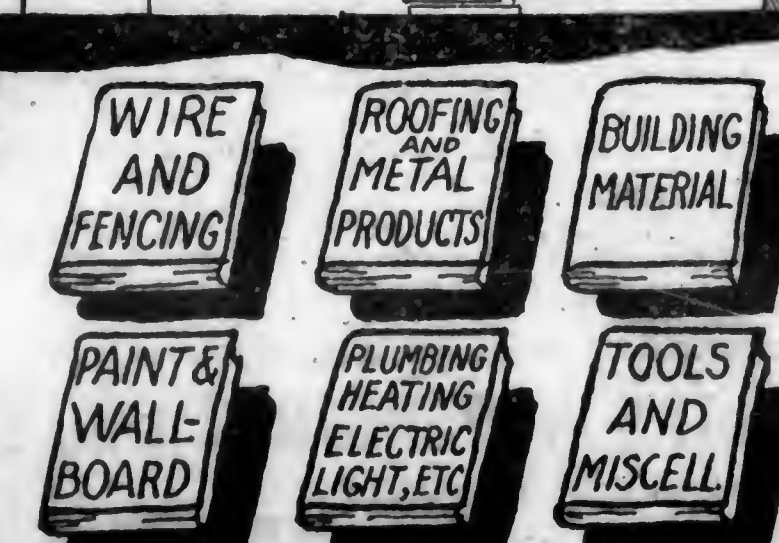
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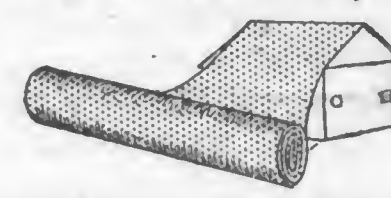
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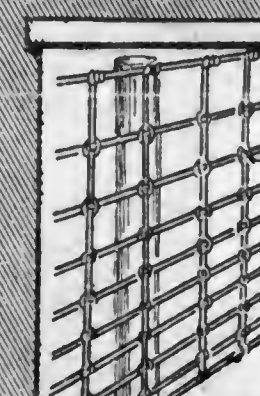
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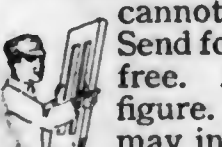
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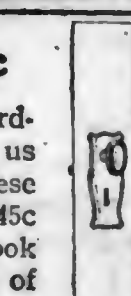
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for, and by, men and
women who take their
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The Practical Farmer

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Number 20

Percheron Mares for Practical Farmers

By WAYNE DINSMORE
Secretary Percheron Society of America

WHY is it that prices on good draft horses remain high? A sound, well matched team of geldings, weighing 3400 pounds or over per pair, cannot be bought for less than \$500 and the buyer is more apt to pay \$550 or \$600. Mares of equal weight and quality cost as much or more, and Percheron mares of

farmers, who have never lost sight of the all-around utility value of draft horses, are now reaping a golden harvest. If you had bought some good, big

of Foreign Commerce, has definite, detailed data on exports. Such data has been furnished the writer:

From September 1, 1914, to June 1, 1916, the United States exported 30,411 commercial automobiles, valued at \$81,295,926; 69,803 passenger automobiles, valued at \$57,623,261, and 22,502 motorcycles, valued at \$4,202,877—a grand total of 122,716 motor driven vehicles, all kinds, with a total value of \$143,122,124.

Against these exports, which have caused the motor-driven knights of the fountain pen to indulge in ecstatic paens of joy regarding the elimination of horses and mules, the cold figures show that during the same period—September 1, 1914, to June 1, 1916—611,790 horses, valued at \$134,943,456, and 167,387 mules, valued at \$34,198,955, were exported—a total, in value, of \$169,142,411.

This overshadows, very handsily, the total exports of motor driven vehicles. To the exports of horses and mules, however, we must add the exports of wagons, valued at \$2,461,611; and of harness and saddles, valued at \$25,739,015. The grand total for horses, mules and wagons, harness and saddles, exported during the 23 months ending June 1, 1916, comes to \$197,343,037—almost two hundred million dollars. This exceeds the exports of motor vehicles by more than fifty-four million dollars, and is conclusive evidence that horses and mules are far from being back numbers in war. Great as are these exports, there is ample reason to believe that they will continue for some time after the war. Russia and South America have large numbers to draw from, but their horses, in general, lack size, so that the United States will in the future, as in the past, be the chief source for supplies of heavy draft horses.

Aside from the export trade, the home demand in the United States for draft horses, is certain to continue strong for many years. Five years is required to breed, rear and prepare a horse for general markets, so that the supply cannot be readily or hastily increased beyond the demand. Furthermore, the rate of increase is much slower in horses than in our



Fairhope 117379. First Prize Stallion, Two-year-old Class, Iowa State Fair 1916.

the same size, quality and weight are bringing all the way from \$1200 to \$3000 per pair. Why is this condition prevalent, in spite of the manufacture and general distribution of motor driven vehicles, and the more general use of steam and electric transportation?

These questions were submitted to the writer by a hard-headed business man who uses draft teams on city streets, and who also has a farm where a number of big teams are employed most of the year.

"Well," I answered, "John Gramliche told me a little incident of his own the other day that may throw some light on your troubles. He said that he bought a motor car in 1912, and ran it for three years, keeping careful account of every item of expense in connection therewith. At the end of three years he sold it for cash, as he wanted to know precisely what the factor of depreciation amounted to. After figuring in all items of operation, and the loss in capital through depreciation, he found that his three years of motor driving had cost him a fraction over ten cents per mile for each of the 15,000 miles traveled. Depreciation was very great, as the car brought only one-sixth of its original cost.

"A year prior to that John Gramliche bought a good useful chunk of a horse for \$130. He wasn't a show horse, but he weighed around 1100 pounds, and after some education proved fairly tractable and useful on a single rig which John's men used around town on business, hauling light loads and at odd jobs. In 1916 John sold this horse; but he brought \$100, or more than 75 per cent. of his original cost. The buyer turned around, fed the horse up a bit, and in less than thirty days sold John's utility nag for \$157.50 to go to Europe; and unless some high explosive shell has ended his career, he is somewhere on the firing line now. When he is killed his skin will be speedily removed and converted into boots or saddles, so that his usefulness will not end even with his death.

"This is why your draft teams are costing you many good round dollars, and it explains why practical

of horse flesh needed to carry on the world's work in peace and war. This shortage is most acute in Europe, on account of the war. They have there a very complete system of railways to transport men, guns and munitions well toward the front, and a splendid net-

work of hard roads over which motor trucks ply ceaselessly carrying needed materials still further forward; but as the battle front is nearer, motor transportation ceases and horses and mules carry men, guns and munitions into action. When guns are needed in a certain position, in a hurry, regardless of obstacles, trucks and tractors are worse than useless, and man's closest friend and most faithful ally, the horse, is the only motor that can be depended on to put men and guns where they are needed, when they are needed. This is why the purchases of horses and mules have risen to staggering totals, and those who have any idea that motors are displacing horses in the greatest war in all history, will do well to ponder on the following:

The United States Government, through the Bureau



Percheron Mares and Foals on Pasture

other domestic animals. He is fortunate who rears four live, rugged colts each year from six mares kept; and this factor, combined with the high cost of keeping horses—at least \$75 per year each—effectually

(Concluded on page 390)

The Practical Farmer

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The date on the address label shows the time to which your subscription is paid. Jan. 17 means that your subscription is paid to January, 1917. Renew at least one month before the expiration of your subscription to avoid missing any copies. It takes a month to change date on label, or to put a new name on our mailing list after we receive the subscription.

Statement of the ownership, management, etc., required by the Act of Congress of August 24, 1912, of The Practical Farmer, published semi-monthly at Philadelphia, Pa., for October 15, 1916.

State of Pennsylvania—
County of Philadelphia: ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Edward T. Walker, who having been duly sworn according to law, deposes and says that he is the publisher of The Practical Farmer and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 4433 of the Laws and Regulations, to wit:

1. That the names and addresses of the publishers, editor, managing editor, and business managers are:

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Publisher, EDWARD T. WALKER	121 N. 7th St., Phila., Pa.
Editor, EDWARD T. WALKER	121 N. 7th St., Phila., Pa.
Managing Editor, EDWARD T. WALKER	121 N. 7th St., Phila., Pa.
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2. That the owners are: (Name and address of corporation, and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

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3. That the known bondholders, mortgages and other security holders, owning or holding 1 per cent, or more of total amount of bonds, mortgages or other securities are: None.

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(Signed) EDWARD T. WALKER, Publisher.

Sworn to and subscribed before me this 25th day of September, 1916.
(Seal) ALBERT M. ROTH, Notary Public.
Commission expires January 23, 1919.

OCTOBER 15, 1916

The Milk Situation

THE milk situation, which in New York City has become acute, is assuming a somewhat similar condition in a part of the milk producing sections adjacent to Philadelphia. There has been more or less agitation among the dairymen, who dispose of their milk to our city dealers, during the last few months.

In the summer the Philadelphia Chamber of Commerce took steps to have a public hearing in which the dairymen could sum up the situation from their point of view, upon which we commented at the time. The idea was to have the milk producers give the exact, as far as possible, cost of milk production upon which they predicated their demand for an increase in amount paid for the milk delivered by them to the dealers of this city.

So far as we know, nothing further has been done; at least we know of no public hearing having been held. Meantime the agitation among the milk producers has been increasing, and there is a disposition on the part of some of them to take the drastic step of refusing to ship their milk to the city unless they are paid a higher price than the city dealers are now paying, or are willing to pay. Some advocate the feeding of milk to pigs, others that, if necessary, the milk be destroyed, and still others favor going out

of dairying entirely, except so far as their own milk and butter consumption is concerned.

The dairymen are being organized in some of the milk territory tributary to this city, for the purpose of forcing from the city dealers a substantial raise in the price paid for the milk, either through moral suasion or by withholding the product from the market. Meetings are being held, both for the purpose of organizing the milk producers, and to devise the best means for obtaining the increase in price which dairymen believe is necessary if they are to continue in the business.

It is needless to say that The Practical Farmer is in accord with this demand that a higher price should be paid to the milk producer. The cost of everything which goes into the production of milk has been on a rising scale for a long time, while the price paid the producer has remained stationary, or nearly so. The price paid by the consumer in this city has been the same for a long time, while about everything else that goes into his stomach has gone up, and is still on the rise.

As we pointed out in our recent article, there are two obvious ways open to the milk dealer: Either to compel the railroads to reduce their charge for bringing the milk to this market, which is claimed to be unreasonably high; or to raise the price to the city consumer. The latter the dealers hesitate to do; the former they may be unable to accomplish.

But whatever course the milk dealer may elect to take, we think the farmer is entitled to a raise in price for his milk, and it is up to him, through organization and co-operation, to get it.

We Must Help Save a Nation

THE oldest Christian nation, Armenia, calls to America, almost the newest Christian nation, and incomparably the richest, for help out of suffering, hunger, and persecution absolutely unparalleled in Christian history.

That is the gist of the appeal, in answer to which the President of the United States, in pursuance of resolutions passed by both houses of Congress, has issued a proclamation appointing Saturday, October 21st, and Sunday, October 22nd, 1916, as Armenian and Syrian Relief Days—to quote the proclamation, "Joint days upon which the people of the United States may make such contributions as they feel disposed for the aid of the stricken Syrian and Armenian people."

A condition which moves Congress and the President to answer an appeal with such a proclamation must be a very serious one, and we wonder if our people really realize the pitiable condition to which the Armenians and Syrians are at the present moment reduced. It has recently been stated that the farmers of this country have given very little to relieve suffering on the other side of the water caused by the great war. If this is true it must be because the need has not properly been placed before our farm people; it cannot be that the farmers of this country—a people famous for their sympathetic nature, their kindness and their willingness to help where help is needed—are indifferent to suffering on a scale without precedent in thousands of years, except from lack of knowledge of the real situation. We are inclined to think our farmers are doing their share in relief work and contributions, but with the feeling that some may not have done what they could do simply because they have not realized the terrific need, we want to call attention to the awful conditions that have brought about the President's proclamation above quoted.

At the opening of the European war there were about 2,000,000 Armenians in Turkey, Persia and Syria. Beyond a doubt they were the best educated, most skillful and most industrious people in the Turkish Empire; but they were Christians and the Turks hated them, and, seeing an opportunity in war conditions for their extermination, they represented that they were afraid of uprisings amongst them and that accordingly they must take measures in advance to prevent trouble. This was the excuse for massacre and abuse without parallel in modern times. To give a slight idea of these horrors we quote briefly from the report of the American Board:

"Of the two million Armenians in Turkey one year ago, at least one million have been killed, driven from the country, forced into Islam, have perished on the way to exile or been deported to northern Arabia.
"The Armenians in the army were first brutally put to death; then followed those who had purchased exemption and nearly all able-bodied males above twelve years of age. After this the remaining men, women and children were sent out upon a journey of months, mostly on foot, to the arid regions of Syria and northern Arabia.

"These helpless, hopeless refugees were forced out from their homes with little preparation for the journey and with no shelter from the storms or protection from the cold or heat.
"A man following one of these caravans for twenty-five miles reported to a United States Consul that he counted over five hundred dead bodies on the road.
"Women giving birth to children upon the road were forbidden to delay by the way, and often died from hemorrhage as they struggled on.
"Children by the hundred were cast into rivers by their parents to save them from mortal suffering.
"A United States Consul reported that he saw refugees buried with clubs because they, when starving, crowded their guards for food.
"Armenian professors in American colleges, with university degrees from European and American universities, were tortured by pulling out their hair and beard and their finger nails, by hanging them up by the arms for hours, and by beating. They were afterwards killed.
"Comely women and girls have been in great numbers forcibly taken into Mohammedan harems. Entire towns have been driven to accept Islam to save themselves from death.
"The Turkish Government permits no Armenian to leave the country, and the closest watch is kept that none escape."

Now, in the wake of the victorious Russian army, the workers of the American Committee for Armenian and Syrian Relief are able to reach many of the million survivors of these atrocities who are homeless, destitute, starving, sick. It is estimated that \$5,000,000 is needed to furnish food, clothing and shelter for this unhappy people. One dollar will keep one person alive for a month or longer; \$25 will enable an Armenian family to be established in comparative comfort. The committee's missionaries and workers are throwing themselves into the work of relief with unparalleled devotion and self-sacrifice; eight of these have died under the terrific strain. It is up to us at home to provide the money—and we must not fail in this emergency. It is particularly desired that the churches and Sunday schools in rural communities, towns and cities make an offering—a generous offering—for Armenian relief on Sunday, October 22nd. We trust our readers will do what they can in their own churches and Sunday schools to bring about a liberal response to this appeal. Individual contributions will be welcome and many who are unable to contribute through churches and Sunday schools will doubtless be glad to send personally what they can to the American Committee for Armenian and Syrian Relief, 70 Fifth Ave., New York City.

We hope that our farmers will rise to this emergency and show that they as a class are not surpassed in sympathy, kindness and charity by any other class of people in America.

"Tear-Down Week" in Massachusetts

THE Massachusetts Forestry Association is actively forwarding a campaign to eliminate all advertising signs that are posted upon public shade trees throughout the state. Attention is called to the fact that the Massachusetts law prohibits the affixing of such signs to trees in public places and it is urged that from October 9th to 14th inclusive the citizens of the state tear down every such sign which may now be in existence and that hereafter the citizens insist that the law be lived up to.

This movement is a good one and may well be emulated by other Eastern States. It is not only that signs of this sort are unsightly and that at road intersections they frequently confuse travelers seeking road directions and routes, but the driving of nails into trees is injurious in that it gives fungi an opportunity to attack the trees while the spaces between signs, where several are on one tree, serve as harboring places for moths and other insects.

Whether or not the law in our other states prohibits the nailing up of promiscuous signs in public places, we certainly have the right to prevent the appropriating of the trees and fences on our own property by the sign fiend and we will do well to assert our rights in this matter to preserve the sightliness of our homes and farms and the beauty of the landscape in general from this abuse.

Bulletin Helps for Farmers

"The Preservative Treatment of Farm Timbers" is the subject of Farmers' Bulletin No. 744, issued by the U. S. Department of Agriculture. Considering how rapidly our fence posts and building timbers decay and require renewal under normal conditions, many of us are glad to be told how this decay may be postponed and expense of renewal accordingly reduced. The bulletin describes a number of different treatments and explains quite fully how they may be applied in the most economical manner. It is free, of course, on application to the Department.

Crimson Clover

By A. E. GRANTHAM

There is no farm crop grown south of It is an ideal winter blanket for Delaware that can be produced at so little expense as Crimson clover. Considering the season and the number of months it occupies the ground, the cost of seed, fertilizers and soil preparation as contrasted with the value of the crop removed and the effect on the soil, Crimson clover is very profitable. The experience of hundreds of farmers is to the effect that Crimson clover will produce a splendid crop of hay and leave the soil in a condition of fertility equivalent to applying twelve loads of stable manure per acre. Crimson clover should become a part of the rotation on a farm and be sown every year.

A crop of Crimson clover and a crop of corn may be produced in the time required to grow a single crop of Red clover.

The feeding value of Crimson clover hay is fully equal to cowpea or Red clover hay.

Crimson clover makes an excellent early pasture, allowing the more permanent grasses to get well started before stock is turned on.

For soiling and silage Crimson clover has some desirable qualities.

As a crop for rapid soil renovation, Crimson clover has no equal on light land. A good growth turned under is equivalent to a good dressing of stable manure.

Crimson clover more than any other clover has the capacity for taking up a large proportion of its nitrogen during the fall growth.

The growing of Crimson clover enriches the soil by increasing its store of nitrogen.

The physical condition of soils is changed by growing Crimson clover; loose, gritty sand becomes a more compact loam with a greater capacity for moisture; stiff clays become more open and friable, allowing better aeration. Even when winter-killed Crimson

clover is its habit of starting growth amid other growing vegetation. Crimson clover sown in corn, tomatoes or potatoes will catch readily if the seed bed is in good condition. Moisture and a light covering of the seed are necessary to insure prompt germination and development. Hence, it will pay well to thoroughly cultivate the previous crop as the shallow mulch formed by proper cultivation will be not only of advantage to the growing corn, but the moisture retained by this practice will leave the soil in the best condition for sowing

orchard cover crop for Delaware. Crimson clover is especially well adapted to the Delaware Peninsula, as experience has verified. The mild, even climate with the absence of sudden and extreme changes of temperature favor the best development of the plant. The amount and distribution of rainfall during the summer and fall months insure the prompt germination of seed during the heated portion of the year. The open winters allow the plant to make some growth nearly every month, which is an advantage in conserving the fertility of the soil and in preventing blowing and washing. The length of the summer season will allow a crop to follow Crimson clover and seed to clover again that fall. Also a seed crop of clover may be removed in time to grow a crop of corn or late potatoes.

Further, the seasonal conditions will allow the clover to be pastured late in the fall and then again early in the spring, periods when other pasture is not available. As growth is not seriously interrupted until freezing weather, the plant will furnish feed until December. Eastern soils vary from a stiff clay to almost pure sand, the sandy loam type predominating. Crimson clover has been grown successfully on all of these types, although the plant will generally do better, other conditions being equal, on a loam soil. Certain precautions in sowing and fertilizing are necessary to secure good results on heavy clays, or on very sandy soils. Earlier sowing is necessary on the clay soil, as the plant must be well established before winter, or it may leave out. A poor sandy soil will require a small application of the mineral fertilizers, phosphoric acid and potash, in order to start the plants. Often the lack of organic matter, or humus, in the soil prevents the retention of

clover. As Crimson clover is sown at the hottest season of the year, some care must be taken to have moisture conditions favorable. With certain crops, as tomatoes, it may not be practicable to harrow in the seed, but the shade of the vegetation may serve to start germination. Most farmers aim to sow at the last cultivation of the crop, the labor serving a double purpose. On soils of low fertility or after a crop like wheat or oats, the ground must be especially prepared either by disking or plowing.

When sown in this manner the growth is generally more rapid, a better distributed stand is secured, and the plants pass the winter in a more vigorous condition. Crimson clover, when following corn or tomatoes, is generally sown at the last working of the crop. This saves additional soil preparation and the plants are given an early start. However, sowing may be delayed and the seed harrowed in later. The general practice in Delaware and New Jersey is to sow from July 1st to August 15th. A soil in a good state of fertility will bear sowing somewhat later than a poor soil. Seeding may take place on especially prepared ground in the open somewhat later than when sown in corn. In any case, it is very desirable to have the plants make sufficient growth for good rooting before freezing weather. As to how late it is safe to sow is largely a matter of season.

Practice has determined the use of about 15 pounds of seed per acre. Few growers sow more or less. This seeding is recommended by some growers to prevent heaving out. Thick fall growth may in some cases serve to cover the ground so as to lessen the daily freezing and thawing of the surface, which will injure the plants. Too thick growth does not allow so perfect development of the individual plant, and on thin soil the dense stand interferes with the size and maturity of the crop. Crimson clover is generally sown broadcast by hand, or with a grass seeder. A portable seeder or hand sowing is necessary in standing corn. The even

distribution of the seed is facilitated by sowing from horseback, although more seed is required because of lodging. On especially prepared ground in the open the wheelbarrow seeder works well. Where practicable, it is desirable to cover the seed lightly. The practice of sowing at the last cultivation is, perhaps, the cheapest method. If possible, seeding should take place immediately after a rain. Much clover is lost each year from sowing on ground with only enough moisture to germinate the seed. The subsequent hot, dry weather pro-

vents further development. On some soils sowing immediately before a rain may be satisfactory, but on soils inclined to run together or bake, the plants may fail to get through. The general practice of Delaware growers is to cover the seed.

Like other clovers, Crimson clover is a heavy feeder of mineral plant food, phosphoric acid and potash, especially the latter. To soils lacking these elements in available form must be added some fertilizer for the clover. The general practice is to apply the fertilizer to the regular crop only, the clover feeding on the residue in the soil. Where the ground is in good condition and properly fertilized for corn and tomatoes, no fertilizer need be applied for clover following these crops. In order to get a start on poor, sandy soils it will be necessary to apply some phosphoric acid and potash. Three to four hundred pounds per acre of a mixture of equal parts of acid phosphate and kainit should be sufficient. Nitrogenous fertilizer is not needed save in extreme conditions, and then only for starting growth. When sown on open ground, it will pay in most cases to use some mineral fertilizer. In any case, the minerals are not lost and will be available for succeeding crops. Some growers claim good success from topdressing the clover with acid phosphate and potash, late in February and March. This promotes a thrifty growth, and less fertilizer need be applied for the following corn crop. The standard fertilizer for corn, where Crimson clover is turned under, is a mixture of acid phosphate and muriate of potash or kainit. The value of lime for stimulating growth or correcting soil conditions for Crimson clover, does not seem to be fully decided by growers. Experiments indicate that lime is of benefit on soils of a clay type. However, as most of the Crimson clover is grown on a sandy loam type of soil, it is possible that better soil ventilation and aeration prevents an extremely acid condition, and hence the failure to note marked results from lime on that type of soil.

(Concluded on page 381)



A Fine Lot of Five-month-old C. S. White Leghorn Cockerels of Danish Blood, on Mercer Poultry Farm (C. V. Hill, Prop.), Trenton, N. J.



Corn Following an Alfalfa Sod—85 Bushels per Acre. Soil a very light sand, not capable of producing more than 20 bushels per acre without treatment.

clover has considerable fertilizing value. Crimson clover is a valuable supplement to Red clover in a three or four-year rotation of crops.

Corn followed by Crimson clover may be grown on the same land year after year with increasing yields. A crop of corn and a crop of hay may thus be secured from the same land in one year.

For protecting soils from blowing and washing, and for taking up soluble plant food which might be lost by leaching, Crimson clover is especially valuable.

moisture to such an extent that the seed will die soon after germination, if they germinate at all. While Crimson clover has the reputation for growing on relatively poor soils, yet in introducing the crop some attention must be paid to the condition of the soil as to moisture and plant food.

The general practice of sowing clover is to follow some cultivated crop. This does away with the necessity for special soil preparation or the use of a nurse crop. One of the advantages of Crimson

THE GARDEN

Edited by W. F. MASSEY
All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

The Use of Cold Frames

As I have before stated, I think, my frames are all made of a portable size, the corners fastened with angle irons and screws, so that the frames can be taken apart and stored out of the way in summer. These frames are made for three sashes, each sash the regular size, 3x6 feet, making the frames 6 feet wide and 9 feet long.

The advantage of having a number of these small frames is that one is not obliged to replant the same crop in the same soil. I can follow a crop of lettuce cut out at Christmas with another crop of lettuce by simply moving the frame to a fresh spot and fresh compost, as I keep a great heap of rotted sods and manure always at hand.

Or if I do not care to move the frame at that time I can replant with a different crop, and usually that crop is radishes and early beets planted in rows 6 inches apart, heavily manured and pushed along with side dressings of nitrate of soda. This brings the radishes sown the first of January into use in late February, and the beets then have the 12-inch rows.

If single glazed sashes are used there must, of course, be mats for covering the glass on cold nights. I use sashes with two layers of glass, making a dead-air space between them, and these sashes keep out all frost in well banked frames with a zero temperature outside.

By the middle of March the beets gradually hardened off will stand any freezing thereafter, and the frame is removed to another place and again well banked on the outside and used for hardening the tomato plants that have been started in greenhouse or hotbed, setting them 4 inches apart each way.

In other frames I set a crop of lettuce plants that have been grown in a frame, and these will head in late winter and early spring; after they are cut out I can set two eggplants to each sash, and keep them rather close, with the sashes over them at night, until they get up against the glass by June, and in this way can get eggplant fruits much sooner than from the plants set out the first of June outside.

In other frames I set, in October, six plants of the Snowball cauliflower and fill in between them with plants of a close heading lettuce like the Tennis Ball. The lettuce will come out in January, and by the middle of March the cauliflowers will be getting up to the glass and will be hardened off and the frame removed to be used elsewhere for tomato plants.

Then in October I plant a frame with Lady Hume Campbell and Princess of Wales violets to give me flowers all winter. These plants are set 6 inches apart and I can grow 50 of each sort in one of my frames. This frame is also removed late in March for tomato plants or eggplants.

Then other frames are planted with Paper White narcissus and Roman hyacinths for winter and early spring bloom and the bulbs are not lost, as they are in forcing in pots in a greenhouse, for in spring I can remove the frame for sowing my China asters and other annual seed, and the bulbs can do without the sashes and go on to fully mature and be good for another season, and, in fact, increase in value.

These frames can also be used in the propagation of the hardy roses. Cuttings

of the ripe shoots of the Remontant roses and the Ramblers, made 8 or 10 inches long, can be set nearly full length in the frames in rows 2 feet apart and kept watered during the winter; nearly all of them will grow in the spring and after the sashes and frame are removed can be cultivated to make strong plants for setting out in the fall.

And this is not the end of the use of the frames, for in summer a frame makes an excellent place for drying fruit. The cut fruit can be placed in trays and set in the frame and the sashes put on and a very slight crack left at the top side merely to let off vapor and exclude insects, or a narrow piece of screen wire tacked to the sash and bent over the opening will better exclude insects. The fruit will dry about as rapidly as in an evaporator. With a number of frames and sashes one can always find use for them in intensive garden work.

In January I sow seed of the Prize-taker onion, and the Giant Gibraltar in a frame, and set the plants out in March to make the large onions often seen in crates.

What Can be Done in October

My planting of the hardy bulbs, such as Dutch hyacinths, narcissus and tulips, was completed the first of October, but there is still time enough to do this work if not already done. In fact, down here I once was checked by cold and freezing in finishing the planting of tulips that came to hand very late, and took the chance of an open spell after Christmas to plant them and they did as well as any of those planted earlier.

With good strong plants of the Early Jersey Wakefield cabbage the last of the month these can be set out anywhere from Baltimore southward. I set them by running furrows 3 feet apart and filling with rotten manure. Then bed on this with a furrow from each side and open a furrow on this ridge and set the plants in this furrow deep enough to cover the entire stem, and they will usually winter well and when the ridge is levelled in spring the plants will be found setting right for the surface soil.

The ridges run east and west as a shelter from cold on one side and sun on the other side, for the winter sun in the early morning will do as much damage as the cold. In colder latitudes it is best to set the plants thickly in a cold frame and keep them as hardy as practicable, fully exposing them whenever the outside temperature is at or above the freezing point.

October is also a good time to set strawberry plants. In fact, down here in the sunny southeastern corner of Maryland we usually set them in November, and find that late fall setting is more certain than spring setting, for the soil will no longer dry out and the plants live better and will make fruit in spring. The everbearing sorts like Progress will give a full crop the next spring and fall. Here these are now grown largely, and as I write this the cry of "Strawberries, strawberries," is heard in the street, and there have been plenty of strawberries all through September and early October peddled around at 10 cents a quart, and these fall berries are far sweeter than the spring ones.

I sow now seed of the Phlox Drummondii for early spring blooming. The

plants are hardy and bloom earlier and better than sown in the spring. Plants of pansies from seed sown in August are now being transplanted in frames or set in open beds. Those in frames will give the earliest flowers, of course, but those outside will winter well and bloom finely in spring.

Cannas and dahlias I bury in shallow pits and cover thickly with old newspapers and then mound the soil well over them and they will winter far better than in a cellar where they are apt to dry up. Down here the dahlias will winter right where they grew if they are well covered with coarse manure, but it is better to lift them and divide them in spring so as to have one stalk to a plant rather than a bunch of shoots.

In colder climates take up the carrots, salsify and parsnips, set the roots upright in narrow trenches, such as are used in some places for wintering celery, and cover them with straw so that they can be gotten at when the ground is frozen. Here we leave these where they grew, as our soil is open in winter more than it is frozen.

I made my last sowing of spinach the last week in September, sowing it broadcast. This sowing is to winter over for spring cutting. Northward sowing may now be made in a cold frame and it will give cutting in late winter and early spring.

Make the garden absolutely clean of weeds and grass, which harbor cutworms, and put all refuse into the compost heap to rot down and go back on the garden. Owing to the favorable season in my garden the crab grass got ahead of us, and we now have a big pile of it to rot down.

Set the lettuce plants in the frames, but keep the sashes off in all warm weather, covering the frames only at night. Look closely after the watering of the frames, and take advantage of rain to open them entirely.

Hollyhocks grown from seed sown in July are now being transplanted to their permanent blooming places. They make a tall background along the garden fence. The plants make long tap roots which I nip to make them branch more. These plants will bloom next summer and for several summers after.

Queries Answered

Raising Vegetables in Greenhouses.—J. B. Florida, writes: "Please give me some information in regard to the raising of tomatoes and cucumbers in greenhouses, and what do you think of it as far south as Tampa? How are the greenhouses built and how are they heated? how are they cultivated, what kind of fertilizer is used, when planted and what kind of seed to use? I am a farmer but have never tried anything like this, but have read a good deal in your paper and it looks good to me."

The forcing of vegetables in winter under glass is a business that demands special skill and experience, and a man totally ignorant in greenhouse work would be apt to fall entirely until after stumbling and falling he may finally learn how to do it. In the climate of Tampa you could grow tomatoes under glass with no fire heat except in the occasional frosty weather. Tomatoes well grown under glass are far better than the tomatoes sent north from southern Florida in winter. The plants should be started from seed sown in late August, planted in the greenhouse when large enough, set 2 feet apart and trained to single stems on twine attached to the roof of the house. The house must be kept moist and a night temperature of 65 maintained, and while you would seldom need artificial heat you will have to have the heating apparatus ready for use when needed. Greenhouses are built in many sizes. The gardeners in the Lake Shore region in Ohio and Michigan, some of them, use very large houses that are plowed by horse power, the soil being a very rich compost of sods and rotten manure piled and mixed a year ahead. If you write to Hitchings & Co., Elizabeth, N. J., for their catalogue of greenhouses it will show you what a greenhouse is. They will send you a house

of any size all ready to put together, and hot-water heating apparatus. A small house 20x50 feet, with boiler and heating pipes, will cost, complete, about \$1000, I estimate. Cucumbers are trained on wire trellises in greenhouses and special skill is needed to grow them and keep them clean of mildew, etc. Davis Perfect cucumber is mainly used, and of tomatoes Bonny Best and Globe. The only way for a man to succeed in this winter work will be to go to one of the great winter forcing establishments north and work for a year or so and learn the business. There are winter forcing greenhouses at Pinehurst, N. C., which you could go and see and get some information. But to enter into this work without any knowledge of the business will be to invite failure. We certainly need better tomatoes from Florida and I believe they can be well grown under glass if the man doing it understands the work. You can get a book from the Macmillan Co., New York City, by Prof. Bailey, called "The Forcing Book," which will give you lots of information in regard to winter forcing. The book costs \$1.25. I could not begin to tell you all about it in a letter in the paper without taking the whole paper to do it.

W. F. M.

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HORTICULTURAL

Edited by C. A. McCUE

Fall Work in the Orchard

After the harvest is over there are always to be found a few odd jobs in the orchard that need to be done before winter sets in.

In practically all bearing orchards there are broken limbs that should be pruned off and smooth cuts made to facilitate early healing of the wounds. Often trees have limbs split down by heavy loads, and in a great many cases these broken limbs can be bolted back into place and if properly braced will heal. If such work is neglected until spring the wood will have become so dried out that healing is an impossibility and the limb will have to be cut off. We have found from repeated practice that it is perfectly feasible to pull together and bolt broken-down peach trees. The limbs are braced for some time with wire trusses reaching across the tree. Holes are bored through the limb and trunk and 1/4 to 1/2-inch bolts inserted; large washers are placed under the head and nut of the bolt so as to provide a secure surface to exert pressure upon.

The chief danger of failure of such operations seems to be the subsequent rotting of the wood due to moisture seeping in through the top of the split. Some have resorted to tacking a piece of tin or zinc over the crack. We have had excellent success by securely binding a gunny sack over the wound and then painting the sack over with a liberal coating of white lead and linseed oil. Some of these improvised bandages have lasted for years without any further attention. In time they rot off, but in practically every successful case of treatment the wound underneath has been found to be completely healed over. We have been very successful in handling broken down peach trees in this manner, but have not had occasion to try it out on apple or pear trees.

Another job that should be done in the peach orchard before cold weather is worming for the peach borer. This little insect probably causes the decline and ultimate death of more peach trees than all the other causes of death put together. The borers should be removed before the weather becomes too disagreeable to do the work comfortably; that is, if we may apply the word comfortably to the job of digging borers.

A great many dollars may be saved by clearing out all rotten and decaying fruit that lies on the ground after the harvest is over. I know of no better way to reinforce the spraying practice and cut down disease and insect injury than by clearing the ground of all fruit remains. In the apple orchard such a practice will tend to destroy codling moth, curculio, scab and various rots that infest that fruit. I know of one large apple grower who systematically keeps the ground cleaned off after his picking gangs and he estimates that the practice has saved him thousands of dollars.

This clean up after the pickers is particularly important in the peach harvest. In our own practice no peach is too badly decayed or too badly crushed to be picked up into baskets and hauled away to the dump, which, by the way, should not be too close to the orchard. It has been a sort of fetish with us to have the ground thoroughly cleaned two or three times a week, and particularly must everything be cleaned up each Saturday night. We have attributed the freedom of our fruit from brown rot and scab almost as much to this practice as to good spraying.

When the harvest is over not only see

that the ground is free from decaying fruit, but that all the fruit is picked from the trees. Mummified fruit left hanging on the trees over winter is a menace. These mummies are veritable spore factories and their output in the spring seems to be inexhaustible. The peach and plum mummies left in the orchard are particular sources of danger. The brown rot is the disease that causes the mummies. When these mummies fall to the ground they lie dormant the following summer; but the second spring they spring into activity and disseminate millions of spores. These spores are scattered about the time the orchard is in bloom and if weather conditions are favorable, that is, a moist atmosphere, the spores attack the blossoms and they rot before the fruit can set. This peculiar fruiting habit of the brown rot mummies is responsible for the very other year attack of brown rot that is so often noticed in certain peach and plum orchards. A clean up after harvest saves all this trouble and lessens the spray bill.

In young orchards the swaying of the trees by the wind often forms soil cups about the base of the young trees. The ground freezes and these soil cups become very good basins to hold water. The water freezes and thaws and as a result the tender wood at the base of the tree is injured, often causing serious splitting of the bark, not only killing portions of the cambium tissues, but leaving gaping wounds for disease spores to enter and cause future trouble. This cup forming is particularly noticeable on the heavier soils, particularly clays and clay loams. Often the trouble may be totally or partially obviated by putting a half bushel of sand about the base of the trees. A number of years ago we experienced a great deal of this sort of trouble. Since then we have each fall sent the men into the orchard before freezing weather and had them mound up the earth about each tree. Since starting this practice we have had no trouble whatever from soil cup. We go over the orchard several times during the late fall and early winter to see that no new cups are formed. If they have been a simple pressing of the soil mound with the foot will close up the cup.

All rubbish that accumulates in the orchard during harvesting, such as props, broken baskets, barrels, etc., should be removed as quickly as possible. Every piece of board or other rubbish may, if left in the orchard, serve as a place for codling moths to gather and pupate, thus forming a source of infection the following spring. This remark also applies to the packing house. Many worms escape from the apples while in the packing house, and crawl into dark corners or into empty barrels or crates to pupate. These pupae emerge late in the spring after the codling moth spray is over and reinfest the orchard. Many a grower has been puzzled because he cannot keep the codling moth under control, when all the time the trouble has been with his packing house. After the harvest, if the house is tight enough it should be thoroughly fumigated and in the early spring all the doors and windows screened to keep the moths in after they emerge.

Leave your orchard clean in the fall so that spring work may start off promptly without any drawbacks. Orchard sanitation is the stitch that saves the fruit in the fruit growing business.

Don't wait until a heavy freeze interferes—start now.

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Whys and Wherefores of Fall Spraying

is the title of a little booklet, giving seven reasons, official and non-official, why it is the best time to spray. This booklet will be sent out by the B. G. Pratt Co., 50 Church St., New York, manufacturers of the well-known "SCALECIDE" at a very early date. If you are not on their mailing list, send them a postal today giving the number of your trees and your dealer's name and you will receive a copy free. Address Dept. R.

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"Capital" Range

Completes with warming closet with full length shelf. Has Duplex grates, for use of coal or wood. Large pouch feed is provided for coal. Oven 15 in. wide by 15 in. deep by 11 in. high, is well built and braced to prevent buckling and has a non-heating wood handle. Wire oven rack is furnished. Oven door is spring balanced, drop type, forming a shelf when lowered. Scoot clean-out door below oven. Cast iron fire door, ash pit door and frame below. Body constructed of polished blue steel. Firebox 17½ in. by 6 in. by 6 in. Cooking top without reservoir, 26 in. by 34 in.; with reservoir, 26 in. by 40 in. Nickel-plated parts are well plated.

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Rocker Bargain. Frame strongly built. Exposed parts neatly finished in imitation Mahogany, nicely grained. Upholstered in choice of imitation black or imitation Spanish leather. Seat measures 30x20 inches supported by 9 heavy steel springs. Width of chair 25 in.; height 36 in. Seat is 17 in. from floor, fully upholstered over wood fibre and cotton. Height from seat to top of back 26 in. Arms about 5 in. wide. This big handsome rocker is built for solid comfort. Order by No. MK242 (imitation black leather). Order by No. MK243 (imitation Spanish leather). Price \$9.50. Terms: No money in advance; \$1.40 in 30 days, balance in nine equal monthly payments; or \$1.60 in 60 days, balance in five equal 60 day payments.

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Can Be Operated Sitting Down—Standing Up—Note High Speed Fly Wheel and Space for Belt for Running By Power

Send coupon for this High-Speed Rotary Washer and let it prove for itself what a wonderful bargain it really is. If you decide to keep it, pay according to price and terms stated below. If you do not wish to keep the washer, return it at our expense.

No. MK244. Hartman's High-Speed Rotary Washer. Easiest to operate hand power washer. Can be run by ten or twelve year old boy or girl without tiring. Note the High Speed Fly Wheel. When started, practically keeps machine going with its own momentum. Fitted with Special Wringer Attachment. Has all latest improvements. Has fewer number of working parts. Cannot get out of order. Built of genuine kiln dried Louisiana Red Cypress. Tub has corrugated bottom and sides, 24 inches in diameter. Strongly bound with three metal hoop bands. Capacity eight shirts. Easy to move about. Properly placed rear plug makes it easy to clean and empty. Like all Hartman machines, this washer is supplied under Hartman's Iron Clad, Unique, Legal Binding Guarantee, so that you need have no hesitation in ordering.

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Place an X in ☐ opposite bargain or bargain wanted, fill in and mail us coupon.

☐ No. MK244, Washer.
☐ No. MK232, Range (without Reservoir). ☐ No. MK234, Rotary Washer.
☐ No. MK233, Range (with Reservoir). ☐ No. MK236, Royal Easy Chair.

If I keep the goods, I will make first payment either in 30 or 60 days and balance in 30 or 60 day payments as per prices and terms quoted in this advertisement.

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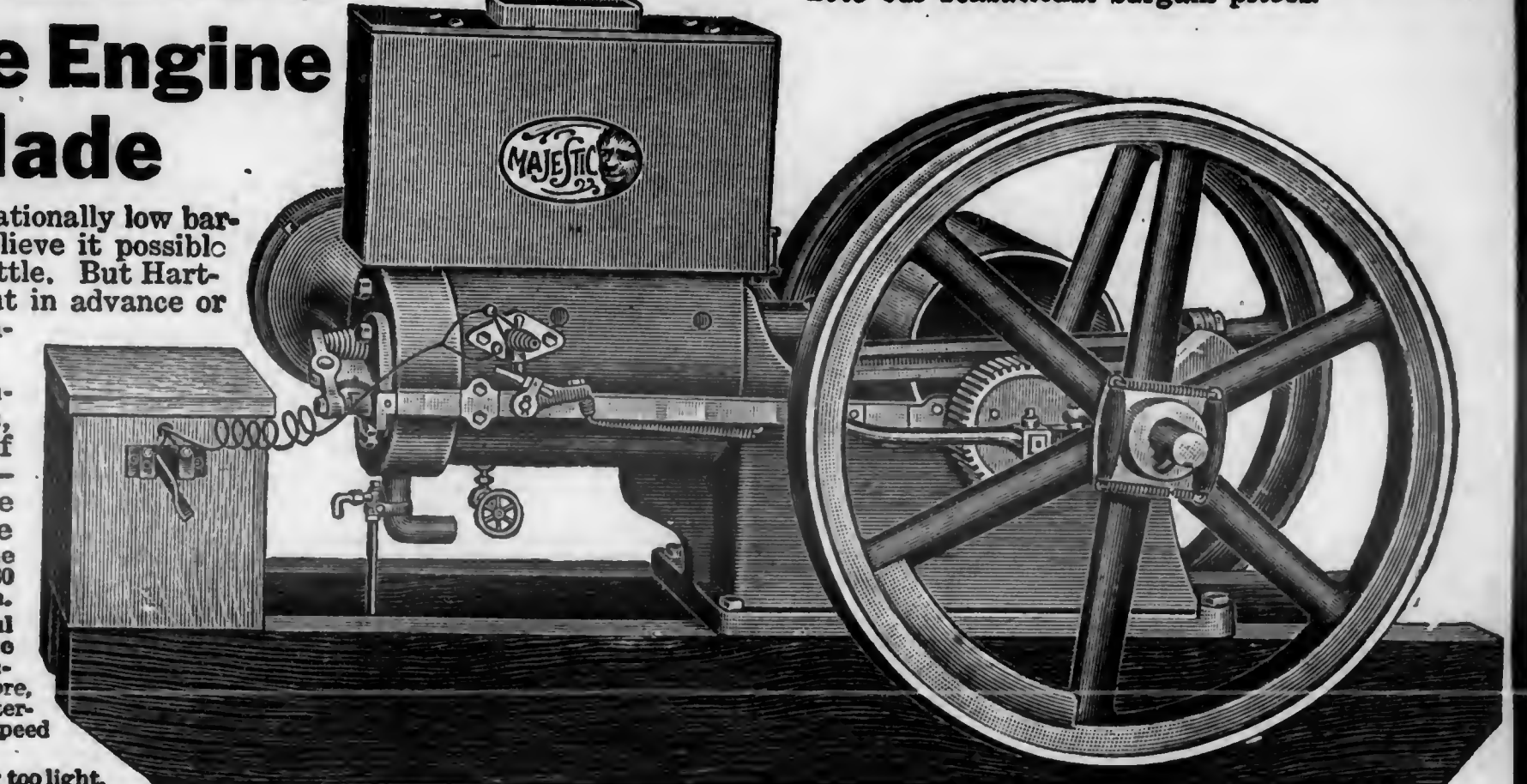
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Send for a Majestic Engine on our No-Money-In-Advance Farm Credit Plan. When the engine comes, work it as though it was your own for 30 days, and if you are not fully satisfied with it in every respect—send it back at our expense and you'll not be out one cent. If you are completely convinced that the "Majestic" is a wonderful bargain and just exactly the engine you've been waiting for, then keep it and pay us one-tenth in 30 days; or one-sixth in 60 days, according to our farm credit plan.

The Majestic is the simplest, most durable, most powerful for its H. P. rating and most economical-to-operate gasoline engine. Not a bit like old style, over-heavy types of gasoline engines which consume enormous amounts of fuel and are, therefore, expensive to operate. Or like others, that are so light they literally jerk and tear themselves to pieces when running at high speed or under a heavy load.

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Sizes Stationary Engines: 2, 3, 5, 7, 9 and 14 H.P.
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Sensational Offer in Cream Separators

This offer is exactly the same as that made above on our famous Great Majestic Engines. No money down—a full year to pay without interest—and the lowest price on this strictly high grade separator. We want you to learn from your own experience that here, at last, in the Majestic is the perfect separator—a masterpiece of mechanical skill and ingenuity—an amazing triumph achieved in Cream Separator construction.

Test it on warm or cold milk and find out by actual results how the Majestic skims down to the last drop—the fine condition of the cream—how much quicker it skims than any other you have ever seen.

The Majestic Cream Separator

Has all the latest improvements including remarkable insulating device that keeps gearing perfectly lubricated and absolutely prevents a drop of oil coming in contact with cream. Also improved separable disc bowl. Simplest to clean—all parts readily accessible—no nooks or corners to gather dirt.

Use it 30 days; then if you're not satisfied it is the most strongly constructed, the easiest running, the closest skimming, and in every way the best separator on the market, return at our expense. The trial costs you absolutely nothing. If you decide to keep it, make the first payment of one-tenth in 30 days or one-sixth in 60 days—the balance in easy monthly payments according to our Farm Credit Plan. We want you to learn all about this wonderful Separator and compare our low price with prices of cheaply constructed inferior makes. Get the proof. It's in our Separator Book. Write your name and address in coupon and mail today.

375 lbs.
500 lbs.
750 lbs.
1000 lbs.



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Rex-Kote Paints Ready mixed. The most perfect paints on the market. Guaranteed not to peel, blister, chalk or rub off. For house, barn or roof. Lowest prices ever quoted on 1, 5 and 50 gallons. All colors. Send name and address on postal or coupon for

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Hercules Flint Surfaced Roofing is the most durable and efficient for every purpose. Heat and cold do not affect it. It is positively proof against all kinds of weather. Made from highest quality, long-fibre roofing felt thoroughly saturated with pure asphalt. Both sides thickly coated with very fine, sharp particles of crystal, which are firmly imbedded under enormous pressure.

Rolls contain 100 square feet. Nails and cement free. We carry a full stock in all sizes and weights for all purposes. Send the coupon or a postal for Roofing Bargain Book and Free Samples of entire line.



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Just place an X in ☐ in coupon opposite catalog or catalogs wanted, sign and mail it to us. The catalogs you request will be mailed to you at once, absolutely free—no obligation to you. After books arrive, note the wonderful bargains and order on our No-Money-In-Advance Liberal Credit Plan. Send coupon for book and details.

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Without obligating me, send a catalog checked and details of your No-Money-Down, Year-To-Pay Farm Credit Plan at address given below.

☐ Majestic Engine Catalog No. E-233
☐ Majestic Separator Catalog No. S-233
☐ Paint and Roofing Catalog No. P-233
☐ Samples of Hercules Roofing.
☐ Color Card of Rex-Kote Paints.

Name.....
Address.....

The Women's Exchange

This is the farm women's own department—for them and by them. It is devoted to the discussion of topics of everyday interest to the women of the farm family. The Practical Farmer invites—expects—you not only to write your experiences on the topics under discussion but also to propose topics for future discussions. The best letter published herein each issue will be awarded a prize of one dollar, and for each other letter published we will pay fifty cents. Address: WOMEN'S DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

NOVEMBER 1.—In training your children, how much and what regular work do you require them to do at home and on the farm—outside of their school duties, of course? Do you believe in paying or otherwise rewarding them for doing this work?

NOVEMBER 15.—Planning the Sunday dinner. How do you arrange to have good dinners without having to spend the whole forenoon in the kitchen or stay home from church? Of what do these dinners consist? Tell us particularly about dinners which can be partially prepared in advance.

DECEMBER 1.—Home-made Christmas gifts. Describe and give full directions for making one article suitable for a present. Give us something new if possible. New ideas are eagerly sought every year, and this Exchange ought to be mutually very helpful.

Get your contribution in early. If it does not reach us at least 15 days before the date of issue, it will be too late.

What has been your experience with kitchen cabinets? Have they any disadvantages to offset their advantages as labor savers? If you are using a home-made substitute of any kind, tell us about it.

Mrs. E. M. A., Asheville, N. Y.—I am sure I am voicing the opinion of thousands of women when I say that one could hardly run a house without a kitchen cabinet after once having grown accustomed to its use. Mine is a rather low style with only two shelves above the work table, and with four bins, cutlery drawers, etc., all below. We greatly prefer the low bins because of the great ease in filling them. Some people think the floor is harder to use from a high bin, but I don't; I would think of trading my cabinet for my neighbor's, whose floor must be elevated to the very top of her kitchen, though hers cost considerably more money. When I have anything whatever to roll out, I simply pull out my molding board (which slides into a slot directly over my floor bin), open the bin, and if any flour scatters it goes back with the other flour. All kinds of cooking supplies are right at hand, so that I can stand at the cabinet and prepare anything I wish to cook, and my oven is reached with only a step. Once when my health was very poor and the only help we could get was a young girl who couldn't cook at all, I found that I could sit beside the cabinet and cook everything much easier than I could do any other work, and, as we had several men, I don't know what I would have done without it. I have never used a substitute because I did not get the "fever" very badly until I got the cabinet, but if I could not have one now I would not lose ten minutes in getting to the telephone to order dry goods boxes with which to construct something that would answer the purpose.

Mrs. R. C. U., Peach Bottom, Pa.—Every modern farm house kitchen should have a kitchen cabinet in a convenient place. The time and steps saved will never be known until one is placed in the kitchen. When baking, instead of having to run here for flour, another place for sugar, another for eggs, and so on, every article being in a different place, simply stand (or sit) at the cabinet and flour, sugar, eggs, spices, cups, spoons, cake tins and everything needed is within arm's length, and without taking but few steps the baking is done with ten times less labor. I cannot mention one disadvantage in having a kitchen cabinet.

Our cabinet we have had for several years and it is not so up-to-date as the later ones, but it answers the purpose just as well. The table part is small, as is the case with most of them. So to make more table room I had a little board (made from a store box) the same height as the cabinet table and one foot wide, placed at one end between wall and cabinet. In this cupboard I keep cooking utensils. At the other end I had a shelf 12 inches wide fastened to the cabinet with hinges and fixed so I can lower or raise it. This adds 2 feet to my table room. Over top of cupboard, cabinet table and shelf I have a pretty pattern of table cloth. The cupboard is stained same color as cabinet, so I have a neat looking cabinet and plenty of table room, which all farmers' wives know is needed.

Mrs. G. S., Hepburnville, Pa.—Mother has her kitchen arranged so it far surpasses a kitchen cabinet, for the busy housewife at least. The kitchen is only 9x12, with the walls and ceiling sided; it has two windows and two doors, one leading to the porch, the other to the dining room. The range fits into one corner, while opposite the range is the big cupboard, the upper part of which is used for dishes, while the lower part is all drawers, made tight, which contain salt, sugar, flour, etc. Next to the cupboard is the white porcelain sink with draining boards on each side. Underneath one draining board is a "pull-out" bake board, one side of which is used for a bread board; over the other a cupboard is built, which contains spices, extracts and other things a housewife needs. This 9x12 mother calls her kitchen cabinet, and it certainly does not take many steps to get a meal or stir up a cake. There are many other handy things connected with this cabinet, such as hot and cold water in sink, rack for towels over stove, hooks for tincups, etc., over sink, lamp attached so light shines in sink, etc.

Mrs. C. P. D., Mallet Creek, O.—Ten years ago upon returning from a visit, what was my surprise to find a fine kitchen cabinet installed in my kitchen, a present from my husband. My experience with it is that as a woman saver it cannot be equaled. It is a pantry in itself, everything needed for work is in it—flour, sugar, spices, extracts and utensils of all kinds. With the aluminum molding board, which is perfectly sanitary, it is the finest thing of the kind I have ever seen.

Before I had my cabinet it would take me a long time to get my utensils together on baking day, as my pantry was one room removed from my kitchen and my flour was in another room, so it really took a good deal of travel to get ready and I would be tired when I began my work. These are the advantages of having a kitchen cabinet. The disadvantages are that your work would become so easy that for lack of exercise your health might fail and life become a burden.

A. S., Harveysburg, O.—I use a table kitchen cabinet 48x27 inches, covered with zinc. Just under the top are two bread boards 18x19 inches. Under each of these are drawers, which have partitions through the middle. In the one division of the right-hand drawer I keep the knives, forks and spoons used in food preparation; in the other division are the rolling pin, biscuit and cake cutters. In one division of the left-hand drawer are the receipt books, a few sheets of waxed paper, a small tablet and lead pencil. In the other division are a hammer, screw driver, a few nails, tacks, scissors and jack knife. Under these drawers are bins for flour and meal. The right-hand one holds 24 pounds; the other is divided, giving a place for corn meal and graham flour.

This table cabinet sits in a niche in the kitchen so that the right half comes directly in front of a window, giving a well lighted work table. A large cupboard two steps to the right, where the cooking vessels, all the dry groceries and condiments are kept, is very convenient, and one does not feel so crowded as when working with the high cabinet above the work table. I would not want to do without a kitchen cabinet. I very much prefer the table cabinet for good practical service.

M. G. F., Dryden, N. Y.—I have used a kitchen cabinet for 14 years, and would not exchange the one I have for any of the newer models. It is sensibly planned and a great saver of steps. I have covered the table part of it with zinc and find that a great improvement over oil cloth. The only fault to be found with most cabinets, and with mine also, is the shelf arrangement—and the same fault is found in most pantries and cupboards also. The shelves are too deep and too far apart, making cleaning more inconvenient and necessitating placing articles one before another.

One should classify the articles to be kept in a closet, cupboard or cabinet, both as to what is used oftenest and as to height and width. If one will actually measure their largest bowls, pans and plates, and their tallest pitchers, teapots, etc., one will be surprised at the wasted shelving space, both as to depth and distance apart. Narrow shelves adapted to the height of the articles they are to house tend to neatness, as only one tier of articles need be placed on a shelf, each readily seen when wanted. I inserted in the cupboard of my cabinet narrow shelves between each two of the wide shelves, and this takes care

Our Fashions and Patterns

Full directions for making, as well as the quantity of material required, accompany each pattern. Patterns are perfect-fitting and seam allowing. When ordering write your name and address in full, state the number and size of each pattern you want, and send 10 cents for each. Address, FASHION DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.



7965.—Ladies' waist. Cut in sizes 36 to 44 inches bust measure. Long or short sleeves may be used.

7966.—Boys' suit. Cut in sizes 2, 4 and 6 years. This suit has a plain blouse and straight trousers.

7968.—Misses' dress. Cut in sizes 14, 16 and 18 years. Linen, tulle or pongee can be used to make this dress.

7969.—Children's play dress. Cut in sizes 2, 4 and 6 years. Long or short sleeves may be used.

7974.—Ladies' waist. Cut in sizes 36 to 42 inches bust measure. Light and dark materials are used in making this waist.

8000.—Ladies' apron. Cut in one size. This apron slips on over the head. 24 to 30 inches waist measure. This skirt is cut in three gores and may be made with or without the applied yoke.

7968.—Girls' dress. Cut in sizes 6, 8, 10 and 12 years. Long or short sleeves may be used and the skirt has two gores.

7974.—Ladies' skirt. Cut in sizes 24 to 32 inches waist measure. This skirt is cut in nine gores and has a slightly raised waistline.

7995.—Ladies' dress. Cut in sizes 36 to 44 inches bust measure. This dress has a three-gored skirt and a plain blouse.

Our Latest Fashion Book

Owing to the number of departments in The Practical Farmer, we are unable to illustrate as many patterns as we would like, therefore, we publish for the benefit of our readers, four times a year, a quarterly fashion magazine called "Every Woman Her Own Dressmaker," which illustrates hundreds of the most practical styles for ladies, misses and children, and tells how to make all kinds of garments. The regular price of this book is 10 cents a copy, but we will send it postpaid for 5 cents, or if you will order it at the same time that a pattern is ordered we will send a copy of the latest at 2 cents postpaid. Address: FASHION DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

Indoor Closet

Mere Comfortable, Healthful, Convenient Eliminates the out-door privy, open vault and cesspool which are breeding places for germs. Have a room, sanitary, odorless toilet right in your house. No going out in cold weather. A boon to invalids. Endorsed by State Boards of Health.

ABSOLUTELY ODORLESS The germs are killed by a chemical process in water in the container, which you empty once a month. Absolutely no odor. No more trouble to empty than ashes. Closet absolutely guaranteed. Write for full description and price. ROWE SANITARY BROS. CO., 1155 BROADWAY, DETROIT, MICH. Ask about the Ro-San Washbowl—Hot and Cold Running Water Without Plumbing.

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of the bottles and small articles, and actually double the capacity of my cabinet. When baking, all my things are at hand in the cabinet—flour, sugar, spices, kitchen dishes, knives, forks and spoons, rolling pin, measuring cups, etc.—with the tin cupboard near at hand. I also keep one drawer for kitchen towels and clean soft cloths.

But if I did not have a kitchen cabinet I should not fret for an expensive one, if economy was any consideration; neither would I do my baking in a more or less distant pantry, as so many women do. I would buy a good kitchen table with drawers for flour and sugar and perhaps a few other compartments—not one, however, that comes clear to the floor, as it interferes with your toes when at work; and I would be sure it was high enough from the floor to sweep and clean beneath easily. Over it I would arrange a set of shallow shelves, protected in part at least, by doors, if possible, to keep out dust, etc. On these shelves I would arrange my kitchenware, cups, bowls, small groceries, tea, coffee, spices, soda, baking powder, etc. I would cover the shelves with white oil-cloth drawn close over the edges with no overhang, and cover the table top with white oilcloth or zinc.

Mrs. B. B., Covington, Ind.—My kitchen cabinet, I believe, is the greatest labor saving article in the home. In two small drawers are kept dish towels. In two others are plain tablecloths and table spreads. In the fifth are receipt books, memorandum blanks, labels and pencils. On the upper shelf closed by two small doors, on one side is a mixing bowl, on the other are flavorings, spices, corn starch, tapioca, etc. On the top one of the three shelves we keep cake and pie pans, each kind stacked alone, so that whichever kind is needed may be quickly and easily reached and taken down with one hand. On the next shelf are salt, soda, baking powder, grater and biscuit cutter. On the bottom shelf are rolling pin, measuring cup, mixing spoon and a small bowl each of lard and meat fryings. In the closet part are kettles, pans, rice, oat meal, crackers, etc., thus having the imperishable supplies always at hand and always in place. We have only to collect the perishable foodstuffs to be enabled to stand, or sit, by the cabinet and complete the preparation of foods with very few steps. When through using the cabinet for the time, we can quickly clean it with a damp (clean) cloth in one hand, lifting or moving the few articles with the other hand. It is sane, simple and satisfactory.

Mrs. C. H., Aspers, Pa.—If a kitchen cabinet has any disadvantages I have failed to discover them. Mine has been in constant use for seven years and grows more useful daily. If I were to purchase one now I would get one with roll door and sliding top, making it more convenient still. Before I could afford the one I have I had a home-made one constructed out of a store box with partitions and shelves, which I placed to suit myself and the things for which they were intended. I padded the top with daily papers then tacked table oilcloth securely over all and hung a starched muslin curtain around the ends and front, thus having a very neat and useful home-made affair.

Farm Insurance

Farmer's Need of Property Insurance and Suggestions for Meeting This Need.

Four kinds of property insurance are written in which the farmer is particularly interested. These are, insurance of buildings and personal property against loss by fire or lightning, insurance of same objects against loss by windstorm, insurance of growing crops against hail and insurance of live stock against death by disease or accident.

To the average farmer the first two kinds of insurance usually make the strongest appeal. One reason for this is doubtless the feeling that fire and windstorm are the destructive agencies that most frequently, at a single stroke, deprive their victims of the accumulated earnings of many years. Perhaps a second reason why farmers usually first provide themselves with fire and windstorm insurance is the fact that these are, as a rule, relatively less expensive

than the other two kinds of insurance here considered. By this is meant that a larger percentage of the money collected from the insured can be used to compensate the sufferers of loss than is the case with hail or live stock insurance. A simpler organization is possible, and fraudulent claims are more easily guarded against.

The fact that hail and live stock insurance are less generally carried by the farmers of the United States does not signify that these forms of protection are not important. Under certain circumstances and conditions they may even outrank in importance the other two. As the American farmer learns to make of agriculture more strictly a science, and to eliminate, as far as possible, the element of chance he will doubtless insist on the further development of all the kinds of insurance here enumerated, and perhaps of still others.

Few farmers are so rich that they can wisely go without insurance. Happily few are so poor that they are compelled to go without a safeguard that to the average farmer may be classed as a necessity. The very farmer who has but few buildings and little personal property, and is perhaps least able to pay for insurance protection, is really the one who can least afford to go without it. Hence the importance of making insurance as cheap as it is possible to make it and yet have it efficient and dependable.

About two-fifths of the farmers in the United States have found a method of providing themselves with fire insurance at greatly reduced cost through mutual or co-operative insurance associations, embracing a single county or some such limited territory. Dependable and cheap windstorm insurance has similarly been provided by means of larger mutual companies, often operating in close relationship with the local fire insurance mutuals. Local windstorm insurance companies have, however, in several instances, been taught by experience, and to their own sorrow, that while each group of farm buildings and to a considerable extent each building within the group constitutes a separate and distinct risk so far as the fire hazard is concerned, the same is not true with reference to the windstorm hazard. Safety and stability in windstorm insurance demand that the amount of insurance be large and the risks widely scattered. The same is true of hail insurance.

A smaller number of farmers have also provided themselves with hail and live stock insurance by means of mutual associations. While a number of these associations have a successful record covering many years, companies representing these kinds of insurance have been less generally successful than have farmers' mutual fire insurance and windstorm insurance companies. Some of the reasons for this difference in success have already been suggested.

Not infrequently letters come to the U. S. Dept. of Agriculture relating stories of hardships due to losses of property not covered by insurance, and asking if some provision does not exist by which the department can aid deserving farmers who have met with special disaster to their property. The answer to such inquiries must, of course, be in the negative.

The Office of Markets and Rural Organization of the department has undertaken a careful study of various kinds of property insurance of interest to the farmer. The information in its possession is at the disposal of groups of farmers who desire to organize with the view of providing themselves under favorable conditions with insurance best adapted to their needs.

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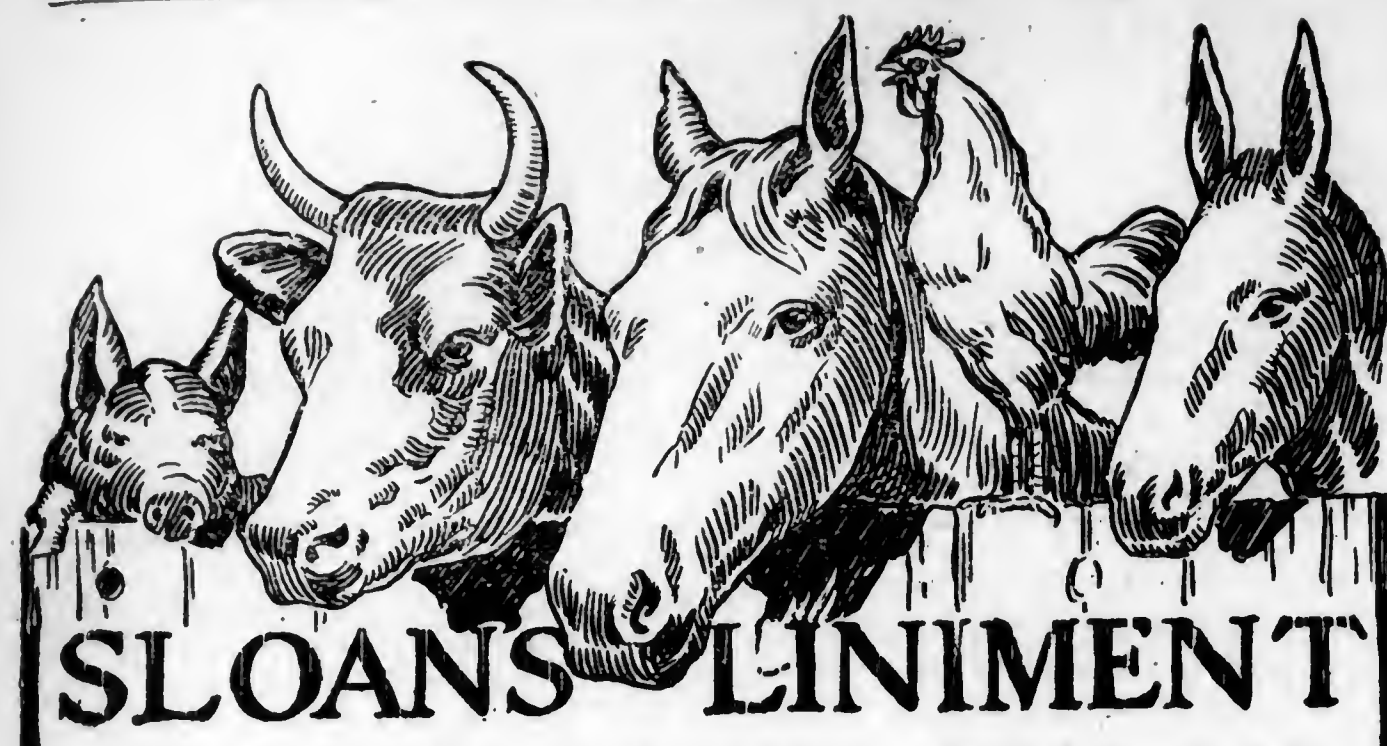
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most economical feed storage that the farmer could employ. The farmers on small tracts of land began to reason the matter, and having decided that corn silage was tremendously good as a winter feed for milk production, came to the conclusion that it would be as good to put up extra silos and fill them in the fall for the coming summer's use. When this thing becomes universal, which it will in a few years, the number of cows on any farm can and will be doubled.

So the matter of handling the corn crop by the use of the silo, by shredding, and feeding all the stock in properly constructed barns, is getting great attention at this time. The idea is to so manipulate the entire corn crop that the grain and most of the stalk products can be converted into beef, mutton, pork, milk, etc. The complete solution of the problem of handling the great corn crops so as to secure the greatest amount of profit for time, labor and capital, is very soon to fully revolutionize farming, so far as this crop is concerned, and this is one of the fine things that the advanced thinkers on the farms have wrought out to improve farm life.

Indiana.

Percheron Mares for Practical Farmers

(Concluded from page 243)

eliminates from consideration men who keep mares purely to rear colts. Horse production in America is, and will be in the future, in the hands of practical farmers who keep only enough mares to do their farm work handily, rearing the colts as a side line, but one worth while.

The farmer with abundant capital can well afford to buy mature Percheron mares, safe in foal, and if need be, with foals at foot. Intelligently handled, they will do all the farm work, and the colts produced will soon pay for the cost price of the mares.

The man lacking capital, or timid about venturing into new lines, had best buy good weanling fillies at \$250 each, or yearling fillies at \$300 to \$400 each. These will give a start at minimum cash outlay, and within three or four years they are producing colts worth as much as those produced by the older mares.

It must be borne in mind, however, that success cannot be achieved without a good sire, and intelligent management in the feed and care of the Percherons. The man who is always having so-called "bad luck" with his horses should stay out of the game. He is foredoomed to failure.

Drafters cannot be grown on canary bird rations. Feed, and plenty of it, is requisite. The foals should never go hungry from birth until three years of age; and the man who is not willing to feed his colts grain when they are out on pasture, cannot expect to secure the scale, bone and muscle which make 2-year-old Percheron stallions weigh 1700 pounds or over at thirty months of age, without being at all fat. Those are the kind of Percherons dealers and buyers generally are looking for, and the practical farmer is he who seeks to produce what the other fellow wants. The small breeder is under no handicap unless he so elects.

The success won by small breeders in Ohio and Iowa state fairs is of particular interest in this connection. At Iowa the first prize 2-year-old stallion headed a ring of more than 20, which were admittedly of as high character as any ring of 2-year-olds ever shown at that fair. This horse was bred by a small breeder near Lewistown, Ill., who has only four or five mares and who, in his desire to breed high-class Perche-

rons, went to the expense of purchasing a stallion for his own use.

The first prize yearling stallion, also winner of the futurity class at Iowa in a ring of 22 stallions, was bred by a small farmer near Amboy, Ill., who only owns ten or twelve mares.

The first prize yearling filly at Iowa, also winner of the futurity stake, was bred by a small breeder near Morning Sun, Iowa, who owns but a small band of mares, and who furthermore was making his first exhibit at that fair.

At the Ohio State Fair the first prize 2-year-old stallion was bred by a farmer near Homerville, O., who has only twelve or fifteen mares, but who was sufficiently determined to have a good stallion to go out and buy a stallion for his own use.

The first prize yearling stallion was bred by another farmer near Polk, O., who has only eight or ten mares. The first prize yearling filly was also bred by a small breeder near Tappan, O.

The yearling stallion and yearling filly just mentioned were winners of the Eastern Percheron Breeders' Futurity, so that six out of a possible eight first prize winners in the 2-year-old and yearling classes at these two great state fairs were bred by small breeders who owned only enough mares to do their own farm work, and in all instances the Percheron mares which produced these winners were mares that did their full share of work on the farms where they are kept.

Success rests with the farmer who farms most efficiently, and Percherons used in farm work contribute mightily to that success.

Eastern American Berkshire Congress Show

The Eastern American Berkshire Congress Show was held at Trenton, N. J., during the time of the State Fair, Sept. 25th to 29th. It was by far the largest and best swine show ever staged in the East. Quite a number of breeders from the Eastern States were among the exhibitors. The class of swine on exhibition was convincing evidence that the East has some of the most prominent breeders of Berkshire swine and that much progress has been made in recent years. It afforded an opportunity for the farmers in the East to study the best type of Berkshires available at the present time. A great deal of valuable information concerning breed type and ideal conformation can be gathered at a pure-bred live stock show such as was recently staged in New Jersey.

Pure-Breds More Beefy than "Scrub Steers"

Numerous illustrations might be cited to prove that the pure-bred animal of any type is more efficient and profitable than the "scrub."

Experiments as well as experience have demonstrated that animals of beef breeding are most profitable for beef production. Dr. H. P. Armsby, head of the department of animal nutrition at the Pennsylvania State College, has found that a "scrub" requires 15.6 per cent. more energy in feed consumed for maintenance per unit weight, than a pure-bred steer. The results of a slaughter test at State College in 1911, are further enlightening.

In this test a high grade Hereford was compared with a native "scrub" steer. The 2-year Hereford weighed 1420 pounds, while the "scrub" was three years old and weighed only 800 pounds, merely a difference of breeding. The dressing percentage was 61.8 per cent. for the Hereford and 50.2 per cent. for the "scrub." In other words, the

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Bred gilts, service boars and sows. \$15-\$35 prepaid express. Write your wants. Jacob Whitman & Son, College Corner, Ohio.

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Ewes and Rams for sale.
CHESTERBROOK FARM, Berwyn, Pa.

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steer of beef breeding produced 11.8 pounds more edible meat for every 100 pounds of live weight than did the "scrub." On the market the carcasses of these steers would have graded as No. 1 for the Hereford and No. 3 for the "scrub." Based on the Chicago market the wholesale prices of these carcasses were 14c. per pound for No. 1, and 8c. per pound for No. 3.

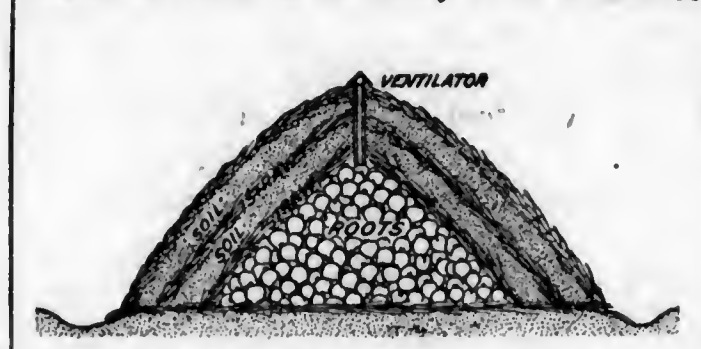
The carcass of the Hereford steer was more valuable because it yielded a higher proportion of the valuable cuts, especially that of the loin and rib. The meat was more valuable because it was thicker.

Storing the Root Crop

EARLE W. GAGE.

The best place to store the root crop is in a root cellar near where they are to be fed. Such a cellar may be a part of a barn, basement, or it may be built conveniently near to the stock barn. In most places the root house can be built very reasonably of concrete. Ordinarily cement is the only material that has to be purchased, as gravel and sand are found on most farms, or near them, in abundance. The house should be built to insure the temperature never falling below the freezing point, and should be at the low point to insure best results.

When no cellar is available, roots have been stored in bins with success. For fall and early winter feeding they need not be covered to any great depth. Place the roots in a conical pile about 4 feet in diameter on a bed of clean, dry straw, then cover with a layer of 2 inches of long straw. Clean rye straw is best. The straw at the apex of the pile should be made to form a chimney 5 or 6 inches



A Makeshift Root Storage that is Satisfactory

in diameter for ventilation. Then throw dirt on top of the straw covering to a depth of about 6 inches. The roots should be piled as high as possible, which will insure shedding water. When removing for use the whole pit is taken to the barn at once. In making the piles the farmer should use care in placing the proper number in each pile for the number of stock to be fed, so that one pile will last one week or less. For early winter feeding the layer of dirt should be thicker, and in addition a covering of straw or horse manure placed over the whole pile. Dig a drain ditch at the sides, all around. When the pile is intended to remain throughout the winter, use two layers of straw and two of dirt. Make the ventilator of four inch boards, placing them at the apex. When severe freezing weather sets in, the ventilator should be stuffed with fine hay. In such a pit roots will keep without freezing in the coldest winter weather. If desired, piles may be made oblong instead of conical in shape, retaining the gable form. While pits do very well, so far as keeping the roots is concerned, it must be remembered that they are but makeshifts at best. A root house which is accessible at all times is much more satisfactory and economical in the long run, and may be built for a few dollars in odd hours in fall, and will last two lifetimes. In summer the root house is very valuable as a milk room, and fruits may be kept in it until needed on the family table.

New York.

Sheep Thrive in Open Shade During the Winter Months

Sheep sheds may combine efficiency and economy. The Pennsylvania State College has demonstrated that sheep wintered in an open shed having a southern exposure, free from drafts and affording a dry bed, are in better physical condition than those wintered in a warm, ill-ventilated barn basement. During the lambing season, of course, warmer quarters are necessary. Ewes may then be removed to warmer quarters and later replaced in the shed. After lambs are three days old they will not suffer in the open sheds, even during zero weather.

Queries Answered

Paralysis in Belgian Hares.—C. L. Pennsylvania, writes: "Recently I purchased four Belgian hares and they arrived in a healthy condition, but a few weeks after they began to cough and discharge a yellowish matter from the nose, and yesterday morning the hindquarters of one of the does was quite paralyzed. It became worse and today we had to kill it. I do not attribute its death to the above mentioned disease. Would thank you for any advice you can give."

The paralysis in this hare was caused by digestive derangement; no doubt the result of a change of food and environment. The coughing was due to common cold. It will be wise to give each of the remaining hares a laxative of a couple of teaspoonfuls of castor oil and follow up with one drop of tincture of nux vomica in a teaspoonful of water twice daily. Feed lightly on laxative foods and keep comfortable. If the cough and nasal discharge have not ceased, mix 1 dram tincture of iron and 2 drams chlorate of potassium in 8 ounces of water, and give a teaspoonful to each three times daily.

Milk Substitute.—A. F. S., Jr., New York, writes: "There is a milk substitute (I believe soy beans enter largely into its composition) which I understand is practically as good (except for butter making) as cow's milk. Can you tell me what are its various ingredients, also the quantities? I wish to make some to feed to calves and wish a formula. Has this been fed to calves and is it good practice?"

The milk substitutes that are used as calf feeds are usually in the form of commercial feeds. Practically all of the commercial milk substitutes or calf meals contain a certain amount of products derived from soy beans. The manufacturers of any of the calf meals will be glad to furnish the applicant with the ingredients used or the composition of the feed in question. This can also be secured from the feed control department, in connection with the Department of Agriculture of the states of Pennsylvania and New York. W. H. T.

Apples as Feed.—Mrs. M. S. Warsaw, O., writes: "Are apples desirable as a cattle and horse feed? Will they hurt cows or horses? Also advise if they are hard on their teeth."

Apples may be fed to live stock without harmful effects. Apples contain somewhat more dry matter than roots and are quite rich in sugars. They are low in protein content and for that reason should be fed in combination with feeds containing considerable protein. As a feed for dairy cattle, apples are regarded as being worth about 40 per cent. of the value of corn silage. If apples of various sizes are fed, it might be well to crush or cut them before being fed in the trough to avoid their lodging in the throat and causing the animals to choke. So far as we know there is no harmful effect on the teeth of livestock from eating apples.

Bloody Milk.—Mrs. S. P. G., Virginia, writes: "We have a fine Red Poll cow giving bloody milk from one teat. Can you tell us the cause?"

The milk will probably have become normal before you see this. If not, bathe the quarter often with cold water and give her 1 ounce tincture of iron in a pint of cold water twice daily until blood ceases to appear.

Warts on Teats.—J. M., Pennsylvania, writes: "We have a cow that has warts on her teats. Please give treatment for same."

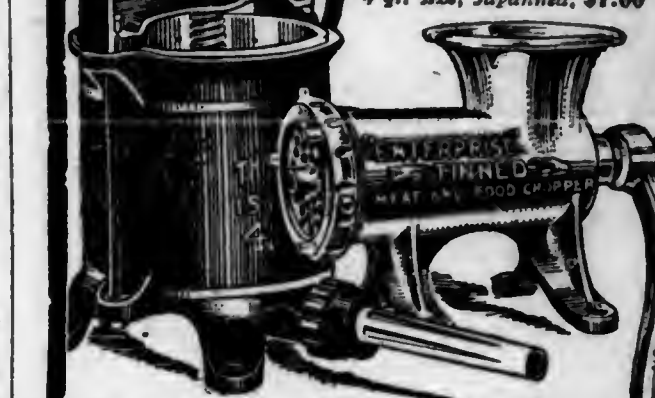
Clip off those with constricted necks, and to the flat ones apply butter of antimony once daily with a feather until they disappear. It is generally wise to defer treatment until the cow goes dry.

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Sausage Stuffer and Lard Press
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Be sure to chop your sausage meat with the "ENTERPRISE" Meat-and-Food Chopper

The "Enterprise" four-bladed, razor-edged steel knife and perforated plate really cut and don't mangle, tear or squeeze out the juices. Works rapidly, is quickly cleaned. Can be used the year round by the housewife in the making of dairy, delicious dishes from left-overs.

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Tells you how to make big profits from your hogs; by F. D. Coburn, former Sec'y Kansas Dept. of Agriculture, covering hog raising and the preparation of pork products. Send for it in stamps for "How to Make Money with Hogs." New Cook Book for 4c in stamps. Send for the "Enterprise" Housekeeper" containing 100 tested recipes and household hints.

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NOVEMBER 1, 1916

The Better Price for Milk

IT has been years since the farmers of this section have shown so much interest in any movement as has been manifested in the agitation for an increase in the price paid for milk by the distributors serving the consumers in several of our Eastern cities. And well may our milk producing farmers be interested in this subject, for it would appear from the facts and figures which the agitation have brought to the front that for years past they have been selling their milk at an actual loss, and it is evident that with the rapidly increasing cost of feed, cattle and labor the amount of this loss is being increased by leaps and bounds this year.

The fact that the milk producing farmers supplying the New York market have already won their victory for an increased price and that those supplying other leading cities in the East have made progress which practically assures the granting of their demands is strong testimony to the power of co-operative and organized effort in agricultural lines as in any other line of employment. In view of the success which has almost universally attended organized co-operation among farmers, why is it that only great emergencies like that which has arisen in the milk situation can bring our farmers together to secure recognition and a just compensation for their products? Surely co-operation and organized effort would have secured a price for milk that would have given a reasonable profit long ago, if it had been employed. Why wait each time until losses have made us desperate before we get together to secure the respect of the consuming world and a proper price for our products?

The recent Philadelphia Milk Conference, an account of which is published on the first page of the Live Stock and Dairy Section of this paper, brought out some interesting facts. This conference was called with the hope that some arrangement could be entered into between the farmer producer and the city distributor by which a radical increase in the price of milk to the Philadelphia consumer could be avoided—or if such radical increase is to be insisted upon, to ascertain the reasons why it is necessary, what the profits in the industry are and who gets them. Under the leadership, for the most part, of the county agricultural agents (who again in this matter have demonstrated their value as leaders in co-operative effort) the farmer producers presented cost figures to show that their demand of 5½ cents per quart for their milk at the station would not give them an unreasonable profit—would, in fact, give them so small a profit that it is a question whether any city business man would be willing to undertake his business on any such margin. The Philadelphia milk distributors presented figures to show that an increase in the price of milk to the consumer, proportionate with the increased price they will be obliged to pay the farmer, is necessary to maintain the reasonable

profit which they have enjoyed for years. Both sides to the controversy were united in claiming that the transportation companies get a little more out of handling the milk than they are entitled to, and the hope was expressed that the hearing recently held before the Interstate Commerce Commission will secure a slight reduction in this transportation charge. It is quite evident, however, that the farmers will secure the price they demand for milk and that the consumer will be asked to pay the entire increase.

In the conference the milk dealers, big and little, showed a tremendous sympathy for the poor, dear public and made earnest pleas to the farmers to be patient and await the action of the milk commissions of the four states before taking independent action, or to modify their demands for an increase, that the poor, the sick and the babies might not suffer. It is interesting to note, however, that even before the conference some of the dealers had advanced the price of milk to the consumer from eight cents to nine cents per quart and from four cents to five cents per pint on the strength of the threatened increase in the cost of the milk from its country producers, and that most of the others gave notice after the conference that they would immediately make the same advance, so that today nearly all the milk consumers of Philadelphia are paying an advanced price—even though it is not intended by the farmers to put in effect their new price until the middle of November. Thus the dealers will put in their pockets thousands of dollars of the dear public's hard earned money on the strength of the farmers' demands, even while they are urging the farmer to be patient and moderate. It would hardly seem that this is the proper spirit in which to enter into negotiation for a compromise.

In all this agitation, surely one thing has been clearly demonstrated—that both for his own sake and for the sake of the consumer who has to pay the bills, every dairy farmer should keep an accurate accounting system, showing not only the cost of cattle, feed, labor, etc., but also taking into account every overhead expense which figures in the business, so that he will be always in position, not only to know himself "where he is at" in the matter of profit and loss, but so that he can show the man who buys the milk and the ultimate consumer just what it costs to produce it and how much profit the producer is asking in the price he demands.

National Dairy Show

THE tenth annual Dairy Show held in Springfield, Mass., last month was not only an array of 980 of the best blooded cattle from all parts of the United States, but it was a great exposition of the dairy industry. For the practical dairyman there were the scientific and mechanical sides of the business; for the boys and girls it furnished new meanings to the words agriculture and domestic science, while for the general public, it was an object lesson of the extent and complexity of the production and handling of a valuable food product.

The cows which were comfortably housed in the large new dairy barns were the admiration of all who saw them. The dairy parade in the arena was a sight to make glad the heart of any breeder. The Jersey entries comprised one-third of the total, followed by the Guernseys, Holsteins, Ayrshires and Brown Swisses. We have arranged for four articles concerning the exhibits of the four leading dairy breeds at this show. The first of this series—an article concerning the Guernseys, from the pen of our special representative at the show, A. G. Morrell—appears in this issue. The other three articles will appear in consecutive issues.

Even the casual observer at the show could not fail to be impressed with the vast amount of labor saving machinery and equipment which was on exhibition. It was not only for the handling and distribution of the dairy products, but, because of the scarcity of labor and a desire by the consumer for a cleaner article, the manufacturers had all kinds of mechanical helps for the producer. Machinery Hall, with its exhibits of separators, pasteurizers, clarifiers and bottling, refrigerating and ice cream plants, gave the consumers some idea of the processes through which milk passes. Silos, mechanical milkers, barn furnishings and auto trucks appealed to the man from the farm. It was shown that the dairyman who tries to produce milk for market without the proper equipment is really paying, by his increased cost of production, for the modern conveniences, but is not receiving any benefit from them.

The success of the boys' and girls' exposition held

in connection with the dairy show, was far beyond the expectation of the men who planned it. It showed the interest which the young people are taking in agriculture and what they are doing to make country life more profitable and enjoyable. The investment which the Federal Government made in bringing together at the show the bright and active boys and girls from ten states to enthuse them with new ideas is a leaven, the working out of which is beyond the power of any man to foretell.

Taking the show away from Chicago was not going a step backward, as some prophesied, but it has resulted in an awakening of all agricultural interests in the East. The old lesson of the scrub versus the purebred was again pictured so vividly that its image will remain for a long time, and we hope result in having soon again, another National Dairy Show in New England.

The Economy of Good Country Roads

ALONG about now is the semi-annual opportunity for the farmers to have an object lesson on the crying necessity for the improvement of the country roads which the majority of them must travel in coming from and getting to their farms.

Even in the rural parts of Pennsylvania contiguous to Philadelphia, where good roads are supposed to be the rule and bad roads the exception, these eyesores and object lessons are plentiful.

Out of the widespread agitation for good roads there ought to come some help for these much used highways, which form such an important part in the scheme of getting the products of the farms from the producer to the consumer at a lower cost. Thus far the help has not materialized to any appreciable extent.

The advocates and boomers of the good roads movements, here and elsewhere, seem to be lamentably blind to the important part which the country roads branching out from county seats and other centers, as well as trolley and railway stations, into the surrounding farming districts, should play in any well balanced road improvement plans which would be largely financed by state or national aid, or yet in the egg, look to the building of costly highways between large cities, where means of communication are already good. These are well in their way. But they are really the point of the pyramid and should come after the foundations, which are the country highways, have been securely laid.

The cost of moving the products of the farm to the nearest market or distributing station, depends upon the character of the roads over which they are hauled; if these roads are muddy and well nigh impassable at certain seasons, all the money spent on expensive highways between the cities, or memorial highways spanning the continent from the Atlantic to the Pacific, will not take off one penny of the excessive price which it now costs to move those products over the average country road.

Here is a little problem in road arithmetic which will be interesting to farmers. The road from Ames to Nevada, Iowa, has been improved with a reasonably hard surface. Before improvement it took 106 pounds, average draft, to pull a load of one ton. After improvement it took an average draft of 75 pounds to pull the same load in the same wagon. The saving in necessary pulling power, therefore, was 36 per cent. when the farmer used the harder surface road. These figures are from the United States Department of Public Roads, which made a dynamometer test on that particular road. Now the problem:

If the largest load a farmer could haul over that road was 50 bushels before it was improved, how much more can he haul now, with the same team and the same wagon? If it cost him 30 cents per load per mile to haul over the old road, how much does he save nowadays for the same size load?

The answers are both easy and interesting. The farmer who used to haul 50 bushels over the old road now hauls 68 bushels with the same team. He gets his hauling done 36 per cent. sooner, and therefore saves 36 per cent. of his time. If his time, and the service of his time, and the wear and tear on his wagon and harness are worth 30 cents per load per mile, and the United States Government says they are, he would save 10.8 cents per load per mile.

Now figure out how many loads you haul to or from town or shipping point, count the mileage for each load, and see, just for fun, how many dollars a year you would save if you had a concrete road from your farm to your shipping point.

The Value of the Grange

By MRS. H. M. WOODWARD

There can be no question about the value of an active Grange in any community; the only question is how any live farming section can afford to be without it. It is the successful plan of farm community building, and in neighborhoods where one has been in existence for even a few years, the influence of the Grange can be plainly seen.

It is surely intended to be a mighty power in the interest of the farmer and his family. It must stand for education and progress along all lines, and form a medium whereby ideas on better farming and better living are implanted in the minds of the people.

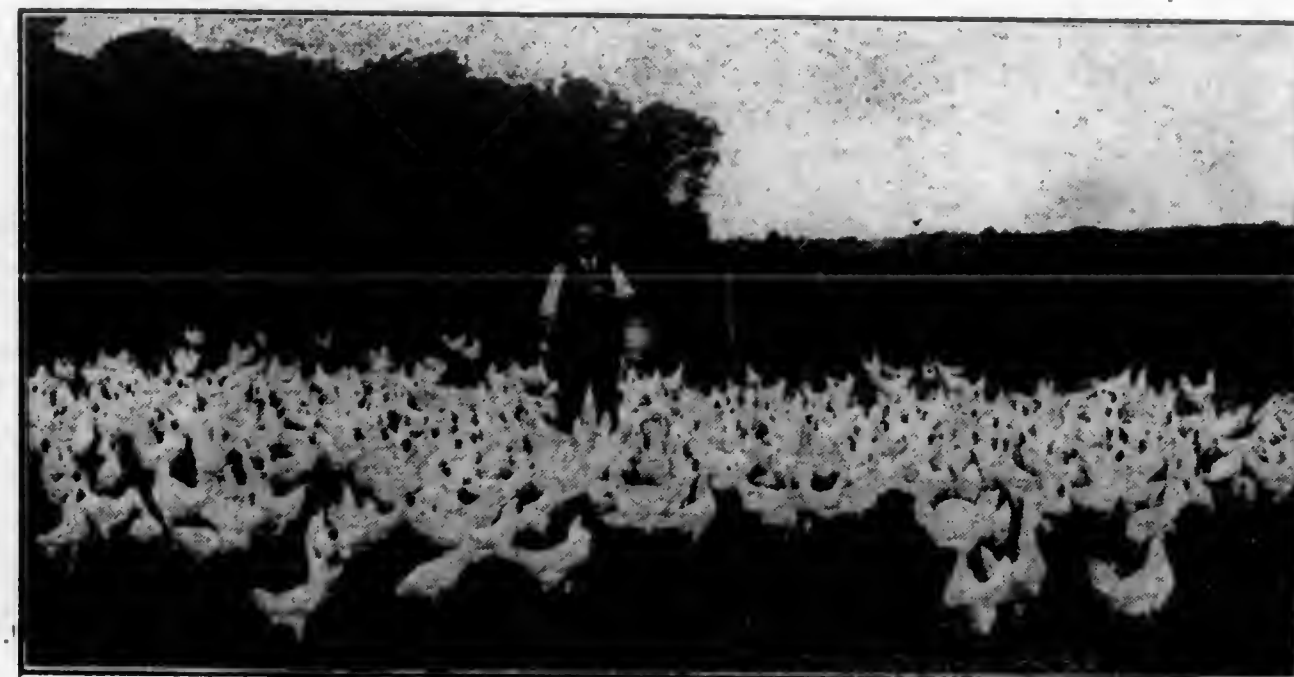
The Grange meeting is one to which all members of the family may go, as the programs are usually made interesting to old and young. In most Granges the women conduct a part of each program, thus keeping them actively interested, and an occasional meeting is given over to the children, at which time they furnish the entire program. Sometimes annual prizes are given to the school children for work along nature study lines, so they will feel that they have a share in the work. When we remember that the country children of today are the Grangers of tomorrow, we will realize that training along Grange lines is a very important part of their education. Nothing pleases children more than competition, so they may be asked to keep a record of all native birds identified during the season; make a chart composed of pressed weeds, one of pressed tree leaves and one of wild flowers, all correctly named, for which suitable prizes may be awarded at the end of the season.

So much of the success of the Grange depends on the lecturer who prepares all the programs, that it is of vital importance that that officer is not only competent and willing to do the work, but is a person with whom the members are in sympathy. When asking a member to take part in some program, he must ask as if he expected the request to be granted. More lecturers fall along that line than any other, and one who asks in an apologetic way, as if expecting to be refused, certainly will be. The programs of a live, up-to-date Grange are varied, suited to the season and made up of both instructive and entertaining matter. Questions that are timely, being discussed just before certain work is to be done on the farm, are always of greatest interest, as each member has his own ideas and is usually glad to advocate them. This is why a general discussion is usually more helpful than a talk by any one member. It is a good way, too, to induce some members to take part, as they have too little self confidence to talk at length, but in a general discussion will give their views freely.

Special days can be selected, such as corn day, when the program, decorations and refreshments can all carry out the idea. Business and professional men from the city can often be induced to speak at a Grange meeting. An accountant can be of great help to the farmer, showing how he can keep his farm accounts and take an inventory much as a man in any other business would do. In this way a farmer is not guessing at what his income is; he can tell exactly. A banker can talk about banks and banking, bringing out many points with which the average farmer is unfamiliar, but which will be of value to him. A lawyer can give valuable advice about laws with which the farmer should be familiar. A physician may give a talk on health topics, a veterinarian on diseases of animals, a chemist on pure milk

and pure water, and so on—the list of subjects which are of vital interest to the farmer is almost endless.

Music and other entertaining features should be a part of every program, as relaxation is needed by those who work hard. For this reason the program should be, as nearly as possible, evenly divided between instructive and entertaining features. During the more busy seasons of the year it is often hard for members to find time to prepare their share of the program. On this account the wise lecturer outlines the program months ahead, giving each one as much time as possible in which to prepare his work. Many Granges publish a calendar of their programs six months ahead, and when this is done there is no chance for a misunderstanding. Granges often enjoy exchanging work in this way—perhaps it is during a busy season and one Grange will invite another one to furnish the entire program, giving some-



A Yard of S. C. White Leghorn Pullets that are "Paying Dividends" at Mercer Poultry Farm (C. V. Hill, Prop.), Trenton, N. J.

thing which has been provided for its own members. This often furnishes an entire new line of thought. Later the favor will be returned in like manner.

Often a Grange chorus, quartette or orchestra can be formed among members, and such Granges are very fortunate, as this gives a chance for great variety in the musical part of the entertainment. I know of a chorus which was made up of the best singers of four neighboring Granges—a competent instructor trained them, the expense being small when divided among so many. They were then able to furnish music at individual Grange meetings, and also at the meeting of the county Grange and at the fairs which are becoming such a factor in the work. The first such fair that came to my attention was held by a Grange whose members all live far from a city or village, most of them from seven to ten miles from a railroad or electric line. Naturally they are more dependent on themselves for entertainment than those who live in more favorable localities, and it seems as if the Grange fair was the outcome of their great need. The exhibits of stock, grain, fruit, vegetables, flowers, canned fruit and vegetables, jam, jelly, pickles and fancy work, are a surprise to all who see them. Sometimes there is a baby show, a harnessing and driving contest for men and women, and other interesting features. Sometimes cash prizes are offered and often ribbons alone are given, but the rivalry seems as keen and as good natured in one case as in the other. A booth is sometimes fitted up for the exhibition of antiques along all lines, and it is surprising how many will be exhibited. Among them all none are of more interest to the farmer than could be performed, so members lost faith and dropped out of the order. Like all new

Guineas are Profitable

By ELIZABETH JEAN

That guineas are profitable, and especially so this season of high prices, is my experience. Last year I painstakingly dressed 1 and 1½-pound chicks and sold them to order for 50 and 55 cents. This year I send them alive in crates to a commission house and get 65 cents apiece for them—only pound chicks.

There is some little "art" required to raise guineas to salable size, and a finer "art" to get them to that size the first of September, when the demand is great, though this season, which seems most unusual, the price is soaring in October. I keep the guineas for breeding housed during the winter and feed them as I do the hens. About April 15th they begin to lay. However delicious the family may consider the eggs, for they are the most delicate in flavor of all eggs, one must save every one if one means to have 1 to 1½-pound guineas by late August. About the middle of May all

(tom of shallow boxes about 2 inches of earth, and over this a little straw; the eggs need the moisture from the earth. When the four weeks of incubation are nearly over, remove hen and eggs to a deeper box until they are hatched, for the little fellows are quite frisky, and if they get out on the floor of the house may prove very hard to catch, or be lost. Remove them to a roomy box with hen and feed about 30 hours after hatching. Clean water in small vessels filled with stones is best unless you have a fountain for them—they must not walk in water, as it is often fatal. The first feed may be fine bread crumbs with charcoal and fine grit, or a little No. 1 cracked corn. Lettuce cut in small pieces given every day is fine for them; chickweed is good also. They can be fed sparingly five times a day and will grow rapidly; but three times, I think, will have surer results, because of less danger of indigestion.

After a week or ten days in a coop with a run attached, let the hen and guineas out some fine afternoon. If they run away from the mother she will call them back, but if you run after them they will go like a "will-o-the-wisp" and you cannot catch them—possibly you have driven them beyond hearing their mother's anxious "cluck, cluck." Now every good day they must be out looking for seeds, which they love. The coops should be placed, if possible, near a grass field and away from other poultry, and cleaned frequently. The chicks should be kept up when it is raining or the grass is wet, until they are feathered and hardy.

After the middle of July when the old guineas are laying in the fields—let them steal their nests and rear their young, they have few failures and bring in fine flocks in the fall. I raised about 100 guineas this year and aim to raise 250 next year. "There's a reason." Maryland.

Granges at a central place, to which any one can bring any articles he wishes to sell. An auctioneer is provided, his fee being the only expense connected with it, and those selling goods share pro rata in the expense. Many take advantage of this plan, not having enough to make it worth while to hold a sale themselves. Almost everything imaginable is brought, and there seems to be a buyer for almost every article. Wood, hay and grain are often sold without showing the goods, the bargain to hold good if they are satisfactory when seen.

When silos first became popular, and it seemed a greater task to build them than it does today, seven members of one Grange solved the problem in this way: Each wanted a silo, but the expense of having an expert come to put them up seemed too great. Material was bought for seven, the expert and the seven men put up one, and having learned how, they put up the remaining six alone, dividing the expense of the expert among them.

Co-operative buying and selling are often a great factor in Grange work, and they rightfully should be. The selling proposition is the farmer's whole income, and the buying end is also of great importance.

In the early days of Grange work, nearly fifty years ago, many people thought that the Grange was the result of the farmer's great need of co-operation in buying and selling, but more was promised along that line than could be performed, so members lost faith and dropped out of the order. Like all new

enterprises, the Grange required time to perfect its system, and now, after the lapse of years, the work is being carried on along scientific lines, and a healthy growth is the result.

To aid in this work of co-operative buying and selling, an executive committee of three members of each Grange in the county meet in regular session with the executive committee of the county Grange. It is their business to keep posted on the market and report regularly to their own Grange. They arrange to buy sugar, flour, coal, stock feed, binder twine, and, in fact, almost all commodities used in quantity on the farm, in car load lots, thus making a great saving in price. Last year sixteen car loads were bought and distributed among the Grangers of my county, one car load being coarse salt used for stock; 36,000 pounds of sugar were bought at a saving of \$1.35 per 100 pounds from the market price. Sixty cents per quarter barrel sack was saved on flour, \$2 per ton on bran and ground feed, 25 per cent. on binder twine, and \$1.50 per ton on coal. This is a great help to the farmer, and, in fact, there seems to be no angle of Grange work that is not of benefit to the Grange member and his family.

It would be impossible for the writer to be anything but enthusiastic over Grange work, living in a state which is so strong in Granges, and in the banner Grange county of this state. Eighteen active Granges in a county make their influence felt in a marked degree.

Illinois.

THE GARDEN

Edited by W. F. MASSEY

All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

The Potato

What has become known in this country as the Irish potato is a native of Peru, and noting the vast importance of the potato crop all over the world, one wonders how the Old World lived without it before America was discovered.

Since its introduction into general cultivation there has been a great evolution and development in the potato. Within my own remembrance the varieties in cultivation were few, and the great development has been of modern origin.

In my boyhood the popular potato was the White Mercer, now hardly known in cultivation. But among all the varieties that have been produced none have been brought out of better quality than the White Mercer. There were other varieties, it is true, and some of poor quality and yellow flesh, while now we never hear of a yellow-fleshed Irish potato. Among the varieties of fifty or more years ago there was one which some called the Red Mercer, also the Long John, and perhaps other names. This was a red skinned potato that had the habit of growing in all sorts of branching forms, almost as branching as the antlers of a deer. It was an enormously productive potato of poor quality and used mainly as hog feed.

Once in feeding these to hogs in a pen one happened to drop out and grew and was allowed to grow undisturbed in the manure-littered soil by the pen. In the fall I dug it, and the crop consisted of one immense potato forked in every direction, and of such a size that it would not go into a peck measure unless broken up. This old red potato has long gone out of cultivation. It had one peculiarity in that one end of every potato refused to cook soft.

The great development in the potato began about the close of the Civil War. The old Mercer, which the Negroes called the "Merciful," had become very unproductive, and there was an effort made to produce a good potato that would be more productive. The first variety to make any impression on the market was the Goodrich. This was said to be a cross of the Peruvian native potato with the Mercer. It was a very productive potato, but of greatly inferior quality to the Mercer; but being early, it had quite a run for a while. Then the Early Dyke came out, and was really as early as any potato we have since had, and was of the round shape since become popular. About 1869 Mr. B. K. Bliss, then the leading New York seedsmen, brought out the Early Rose. The Rose and the Peerless were said to have been grown from the same ball of seed. Whether this was so or not, they were evidently very different.

Mr. Bliss advertised the Early Rose at \$1 a pound. I promptly sent the dollar, and waited weeks for the potatoes, and finally Mr. Bliss advanced the price to \$3 per pound, and I wrote him a sharp letter, asking why I had not received the potatoes ordered under his first advertisement. He replied that they had been sent, but were evidently lost in the mail and refilled the order. I received three pretty potatoes for my pound.

These I cut to single eyes and planted in my garden, and dug from them 35 pounds of all sizes. Then in January I cut these in halves and placed them in the sand propagating bed in my greenhouse. They started at once and as fast

as the tops developed I made cuttings of them and rooted them and potted them in 4-inch pots, and by planting time I had a good sized greenhouse full of flourishing potato plants, and in the warm, moist air they were making little potatoes on top of the pots. From this 35 pounds of seed I planted an acre of potatoes, and made a good crop while they were still selling for \$15 a barrel. Of course, this sort of expensive propagation could only be profitable with the product at a high price.

The Early Rose had the greatest run of popularity of any potato introduced to that time, and some of the Maine growers made special efforts at its further improvement, and the Houlton strain of Early Rose became the leading variety among market growers.

The Peerless, not so early as the Rose, also became popular and was a good producer, and is still largely grown in the West and far South. Other varieties came in rapid succession. Among these were the Early Ohio, very similar to the Early Rose and slightly earlier, Beauty of Hebron, Bovee, Snowflake and others claiming to be the earliest, while the varieties of late potatoes became a host. Some of these had a brief popularity, like the Burbank, now very little grown, and others, while productive, lacked quality, such as the Hoosier, Maggie Murphy and others. Sir Walter Raleigh was of fine quality, if not so productive as some others. Green Mountain is still largely grown.

But the practice of keeping over the early varieties in cold storage for late planting has made a great change in the seed production in the South. While the Early Rose was the leading early variety, it was found in the South that a good second crop could be grown the same season from the early crop, and these were used largely for seed the next spring.

But with the keeping over of the early potatoes in cold storage, it was found that these made a fine late crop and the best of seed for spring planting. Since the introduction of the Irish Cobbler, which is now grown almost exclusively in the Atlantic Coast region from New Jersey southward as the early crop, it was found that this variety does not make a good second crop for the early seed, and the cold storage method has proved best. These potatoes in repeated experiments at the North Carolina Station have proved to make far better crops than seed brought from Maine. But the Cobbler has gotten so mixed with a similar variety that it is difficult to find a really pure stock. The variety called Beauty or Quick Lunch, seems almost identical with the first Cobbler, and gives an earlier and cleaner crop.

What is now needed is more attention to the selection of seed from the most productive hills. Potato varieties have run out because of lack of care in seed selection, and it should be perfectly possible to keep a variety productive if care is taken in the seed selection. A hill that makes a large number of potatoes will make better seed than a hill that makes only three or four large ones. Cultivation will make the size if the prolific character is maintained.

"For the Land's Sake use Bowker's fertilizers; they enrich the earth and those who till it."—Adv.

What Can be Done in November

From Baltimore southward the Early Wakefield cabbage plants can still be set in the furrows or on the side of ridges. Set the plants deep enough to cover the entire stem. I have heretofore given the method I use. Northward set the plants thickly in cold frames and use the sashes only in very cold weather.

Lettuce in cold frames will need close attention to airing in sunny weather, for if kept too close the plants will get tender and easily damaged in single-glazed sashes unprotected by mats. While I endeavor to get the first crop of fall frame lettuce headed by Christmas, I try to keep plants hardy and do not allow the sashes to remain tight when the sun shines warmly, for a temperature of 45 at night is warm enough for lettuce, and it need not go above 60 in the day time.

In the climate of Philadelphia the late cabbages should be buried or stored this month, while down here we defer this until the last of the month. While here we let the late beets, carrots, parsnips and salsify remain in the rows where they grew, in colder sections these can be placed in trenches as I have already stated. Parsnips and salsify are hardy anywhere, but where the ground freezes up hard for the winter it will be hard to get them at times when wanted. Down here our soil is open more than it is frozen.

Cauliflowers can be set in frames six plants to a sash and the space filled with close heading lettuce like the Tennis Ball, which will come out before the cauliflowers need all the room. With my portable frames of three sashes each I can strip the cauliflowers by the middle of March and use the frame for tomato plants, and the cauliflowers will head in April and May.

Our first white frost came this year October 11th, a day later than last year. No damage was done, and we seldom have a real killing frost until after the middle of October.

But when a real killing frost occurs the tops of the cannas and dahlias should be cut and the roots lifted. Here we bury them in shallow pits and cover with straw or old papers and mound the soil over them. If stored in a cellar, they are better covered with sphagnum moss to prevent their drying out, and the moss should not be allowed to get completely dry during the winter.

If you are growing violets in frames for winter bloom, keep the runners pinched off until you want new plants in spring, and keep the frame clean of weed growth. If under single-glazed sashes you will need straw mats to cover the glass in cold nights. With the double-glazed sashes I find no need for the extra cover. I grow the Lady Hume Campbell and the Princess of Wales, the first one a double and the latter one a single flowering variety. The single variety gives the most flowers.

Pansies grown from seed sown in August are now set in the frames 6 inches apart for early flowers, and others are planted in outside beds for later blooming.

Now is the best time to cover the garden all over heavily with manure and let it lie all winter. By spring it will be in condition to feed the crops. Fresh manure applied in spring does not do near as much good as the decayed manure.

If you are so unfortunate as to have a garden with a very heavy clay loam soil that bakes hard in summer it is well to break all unoccupied soil now and leave it in the rough state all winter for the frost to mellow it, and still better to

sow some winter growing plant, like rye, on it to turn under in early spring, and then work into the soil a liberal application of lime. In such a soil the keeping up of the humus or organic decay in the soil is important, for there is nothing that will have such a mellowing effect on a clay soil and vegetable decay, either from the organic matter in stable manure or from green crops turned under, while lime tends to flocculate a clay soil, that is to gather it in small lumps, making it looser and less liable to run together and bake hard.

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The Practical Farmer

P. O. Box 1321, Philadelphia, Pa.

HORTICULTURAL

Edited by C. A. McCUE

Selecting the Variety

The fall planting time for fruit trees is at hand in the greater portion of the territory served by The Practical Farmer. Many are debating the relative worth of the various varieties offered by the nursery trade. The question is a vital one and means dollars and cents to the majority of those contemplating planting fruit trees.

Before going into the reasons for choosing certain varieties it might be in place to say a word or so relative to fall versus spring planting. Where the climate will allow the practice it is always best to fall plant. This applies especially to apples and pears. Where the winters are not too severe we would also advise fall planting of peaches. Cherries and plums we think had best be planted in the spring. In those climates where the winters are not only cold but dry and subject to high winds all fruit trees should be spring planted.

Full planting permits the tree to become established, so to speak, before winter sets in, but the great advantage lies in that the tree is in place to take advantage of the first growing weather in the spring. This advantage may, and usually does, result in nearly a fourth to a third more growth the first year. All cut root surfaces become thoroughly calloused over during the winter and new rootlets are thrown out early in the spring. Usually there is more time to do the planting carefully and painstakingly in the fall than there is in the rush and bustle of spring work. Taking all things into consideration, it becomes almost an axiom that wherever the climate permits, apples and pears should be fall planted.

The proper choice of varieties is most important and this point alone may mark success or failure. No one can advise another as to what varieties are absolutely the best to plant, although the skilled man may give many suggestions that may or may not suit each individual query. Some of the points that suggest themselves in choosing varieties are as follows: First, the use to which the trees are to be put; that is, the purpose for which the trees are to be grown. Such use usually resolves itself into two classes, planting for commercial purposes or planting for home use.

In planting the home orchard one wants a succession of fruits throughout the season and not any great quantity at any one time. In such plantings the chief things to be considered are personal preference, succession and quality. Under personal preference one may select varieties that are not commonly grown for market; they may be poor keepers and poor shippers. They are for immediate consumption and quality and season outrank most other considerations. In the home orchard one may allow his personal preferences to run riot, providing, of course, that he chooses varieties that will grow in his climate. As to succession, he should choose varieties that will keep the family supplied with fresh fruit from early summer to spring. For peaches, cherries, pears and plums he must choose varieties that will can well. His winter varieties must have good keeping qualities in common storage. Quality should be the slogan for the home orchard. For home use one may grow varieties of good quality that would not be tolerated in the commercial orchard. Many old-time favorites have almost

been discarded by the nurserymen because they do not meet commercial standards.

In the commercial orchard the aim is to grow varieties that the great fruit markets of the world demand. As, for example, in apples the market demands attractive color, good shipping and keeping qualities. Flavor and the other attributes that go to make up quality are a secondary consideration. The public is rapidly learning to discriminate between varieties of good and poor quality; but the majority of the city buyers still "buy by the eye." From the grower's standpoint, outside of its selling qualities, a desirable commercial variety of fruit must be a free grower, be an early bearer, run an even grade, be a heavy producer, color well, and be either immune or highly resistant to insect ravages and fungous or other diseases.

One of the most common mistakes in the choosing of varieties that do not thrive in the locality. While the Baldwin is the great market apple of the world, yet it would be folly for a Delaware or eastern Maryland grower to plant Baldwin. On the other hand, a Michigan grower should not plant the Stayman or the Winesap. A western New Yorker would be doomed to failure if he tried to grow Winesap. Every variety seems to have some place where it grows best. Some varieties are adapted to wide range of localities, while others appear to be more local in their successes.

If the grower is new at the game he should seek the advice of successful orchardists in his own locality. He should visit neighboring orchards during the harvest season and compare merits of the various varieties grown. He should try to adapt the experience of others to his own needs and conditions.

Choose varieties that the market wants. Go to the nearby cities and talk with the apple dealers. Learn what the public wants and when it wants it. Certain cities appear to have certain preferences. If you expect to market in certain markets, learn what that particular market is willing to pay most for. Try to pick the best seller. The best sellers grown in Michigan, northern Indiana, southern New York, New England and northern Ohio and most of Pennsylvania are Baldwin, Greening, McIntosh, Spy and King. For southern Indiana, Illinois, Missouri, New Jersey, Delaware, Maryland and most of West Virginia are Stayman, Grimes, Winesap, Ben Davis, Williams, Yellow Transparent, Rome Beauty, York Imperial, Paragon and New. True, there are regions in each of these territories where other varieties prove very profitable. For instance, some parts of Pennsylvania find Jonathan and Stayman to be their best apples. Virginia has her Albemarle Pippin, and southern New Jersey has the Starr.

Do not choose a variety just because it has succeeded somewhere else. The Pennsylvania fruit grower should go slow in picking a variety just because it bears a great reputation in Arkansas or Oregon. Do not be misled by nurserymen's catalogues, or submitted specimens. The fruit from which the picture in the catalogue was taken may have grown two thousand miles away. I was once urged by a nurseryman to plant a certain variety; he sent me several specimens, so that I could see just what the fruit looked like. They were certainly fine, but alas, I learned that they were grown in Colorado. I lost interest at once. I did not care particularly how fine that fruit grew in Colorado—I wanted to know how well it would grow in Delaware. I rejected it, and from viewing, some years later, some specimens that were grown in Delaware I felt that I did a wise thing when I refused to speculate with that particular apple. When it comes to picking the variety you expect to make your living from you can't afford to take more risks than are necessary.

In these days of high cost of land and the large expense necessary to bring an orchard into bearing, how soon a variety will bear is an important question. All other things being equal, choose those varieties that come into bearing quickly. Few can afford to plant Northern Spy, on account of the long wait for the apples. Avoid varieties that are susceptible to certain diseases. For example, the Stark in many localities is a fine apple in every respect but one—it is very prone to attacks of bitter rot. The Starr is very susceptible to blight. The Grimes to cellar rot; the McIntosh to scab. Often when the susceptibility of the variety lies in the root or stock you can secure double worked stock. Undoubtedly Grimes should always be double worked.

As far as possible choose varieties that are not strongly marked by an alternate year bearing habit. You want your income every year and not every other year. If you expect to pack in boxes, pick varieties that adapt themselves well to the box pack and do not produce a large amount of culls. Varieties that run very uneven as to size and form add to the cost of grading and packing either for barrels or boxes. Thus one should take into consideration whether he expects to market in a box or a barrel. As a rule, only varieties of fairly high quality are packed in boxes. Ben Davis and York Imperial should never be grown for a box trade.

Lastly, how many varieties should one choose for a commercial planting? Many make the mistake of planting too many varieties. Too many varieties complicate harvesting operations and increase the cost of growing. Plant as few varieties as possible. Choose varieties that have different ripening or harvesting periods. Great loss of fruit may result if several varieties need caring for at once. Choose a succession not only as to ripening time, but as to marketing time. For example, for districts just south of the Mason-Dixon line a good list of late apples as regards succession for commercial planting would be Grimes, Jonathan, Stayman, Paragon and York. For peaches, Miss Lola, Belle, Elberta and Hale and Francis.

Above all, the grower should remember that good culture, good spraying, up-to-date harvesting and marketing methods can never make a poor choice of varieties a commercially profitable proposition. Too much haste puts a hole in the purse.

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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

Shall We Apply Lime During the Winter?

Very often we are asked if it will pay to apply lime to newly-sown wheat during the winter so as to improve the chances for the clover to be seeded in the spring. If the land is quite acid it is useless to expect a vigorous growth of clover. While it is best to have the lime stirred into the surface soil before seeding, yet observations have indicated to me that the clover is benefited by applying lime on the surface of the soil during the winter. The natural tendency of lime is to work downward in the soil and under humid conditions and more or less open winters that we have in the Eastern States, some beneficial results should be noted.

Last July I examined a field from which the wheat recently had been cut and which had been seeded to clover in the spring. The owner stated that he had top-dressed the field with ground limestone in February. As we walked over the field, which was well set in clover, the owner said: "Do you notice that strip through the field?" Before us extended a strip about a rod wide across the 80-rod field, in which there was very little clover, and that yellow and dying. "That is where I made a round with the lime distributor out of gear," explained the farmer. One could follow the unlined area the entire length of the field. Also the fact that the ground limestone was used made the results more significant, since it is less readily soluble than the burned or hydrated forms of lime. There is little or no danger in top-dressing the wheat during the winter with freshly slaked lime, providing it is applied when the ground is frozen or when the plants are dry. Clover is so difficult to secure that winter liming of wheat should be considered if conditions made it impossible to apply lime in the regular manner.

Late Seeded Wheat

For various reasons the wheat crop is often seeded a little too late for the best results. The practice of removing the corn crop and plowing the ground preparatory to wheat, prevents seeding early enough for the plants to become well started before winter. The wheat plant should be developed sufficiently at the beginning of freezing weather to cover the ground fairly well. A field that has not taken on a decided green color before cold weather sets in is not in a condition to withstand the extremes of winter. The proper stage of the development of the wheat plant at the beginning of winter is indicated by the spreading habit of the individual plant. The large number of shoots or rudimentary tillers that are formed gives the wheat that grass-like habit so noticeable late in the fall. Unless this condition is reached during the fall growth of the wheat the land is too poor or the wheat was seeded too late. In many cases the wheat is seeded late with too little fertilization. This weak growth of the wheat can be greatly improved and the plants prepared to pass the winter in good shape by top-dressing the field late in the fall with a light covering of stable manure. This acts as a mulch during the winter and at the same time furnishes the wheat with some plant food as needed. An application of three or four tons of fairly fine manure

will be sufficient to work wonders in bringing out the wheat. Even a less quantity will be of value, providing it can be evenly spread. Rotten straw or pound manure that is short enough to spread evenly will be of much value.

The top-dressing of manure may be applied any time when the ground is dry enough to prevent damage from tramping, or it can be put on after the ground has frozen. If possible, it should be applied before the wheat is entirely dormant. Care should be taken to apply the manure evenly, as the wheat plants may be smothered. This method of treating wheat not only greatly aids the wheat, but practically insures a stand of clover the next year. The clover seeded in the spring is afforded a better lodgment in this mulch of manure which also supplies moisture conditions favorable to germination.

At the present prices of wheat it surely will pay to stimulate and protect the late-sown crop, especially since a much better stand of clover can be secured by the same treatment. It may occur to some that backward wheat may be top-dressed in the spring with nitrate of soda. This may be done with profit, providing the wheat passes the winter. On the other hand, late-sown wheat may be so severely injured by the winter that top-dressing in the spring would be useless. The only treatment that can be applied after wheat ceases to grow in the fall is manure. Where manure is used it will hardly be necessary to apply nitrate of soda in the spring.

Boulders on Farms

THOS. STEPHENS.

I wonder if every farmer feels the same way about boulders in his fields as I do? It always disgusts me to see a farmer plowing around big boulders breaking his machinery and harness and sometimes his ribs.

There may be some little excuse for the man that permits stumps to remain in his fields. He consoles himself with the thought that they will rot out after a few years and save him the expense and labor of getting rid of them sooner. The owner of boulders, however, has no such consolation. Never since these stones migrated south on the bosom of a big glacier has one of them been known to rot or disintegrate of its own accord. They are squatters of the sort that remain forever where they originally settled, unless some uncharitable farmer routs them off his land. The soil they encumber is usually of a rich virgin type and the crops which it would produce would pay for the cost of disposing of the boulders ten times over in a few years. Oftentimes the stone itself can be sold for building purposes at a price that will more than pay for the cost of clearing. A small boulder 4x6x3 will weigh about five tons. As rock crushers will pay 40 cents per ton for stone, such a boulder would be worth \$2, which is more than it would cost to break it up.

Before the advent of low-freezing and non-freezing grades of dynamite, we Pennsylvania farmers had to tolerate a good many boulders in our fields because we hadn't the time to blast them out in summer and the old straight dynamites couldn't readily be used in the open in winter. Now, however, even that prop is knocked from under the owner of boulder strewn fields because the blast-

ing work can be done through the winter when he is not busy with other farm work.

The cost of blasting rocks isn't very much. For instance, one weighing a ton can generally be broken with two sticks of dynamite, unless it happens to be a roundhead or "niggerhead," so called, in which case a little more may be necessary.

There are three methods of breaking boulders known to blasters. First, snakeholing, by which is meant making a hole in the ground under the boulder, in which to load the explosives charge. This will generally lift the rock out of the ground and oftentimes break it into pieces as well. If the object is merely to take the stone out of the ground, it is well to place a charge of this kind under one end so as to form a leverage. If the object is to break the stone, it is best to place the charge under the center. Any ordinary steel bar can be used to put the holes under the boulders. Such holes should be carefully tamped so as to get the full effect of the explosion on the stone.

Another method of breaking boulders is by mudcapping. This method should be resorted to only when the stone is entirely out on the surface of the ground. This method requires less labor than any other, but more dynamite. The powder is simply laid on top of the stone and covered with a large cap of moist or wet soil. I find it best to remove the cartilage paper from the dynamite so that I can place the charge in a compact mass well patted down with the hand on top of the stone. Mudcap blasting is rather dangerous, because of the long distance pieces of stone are likely to be thrown. I would advise going away four or five hundred feet after lighting a mudcap charge.

The third method is called blockholing, which means drilling an inch or inch and a half hole down into the rock and loading the charge into the hole. Boulders can be broken up with very much smaller charges of dynamite by the blockholing method than when mudcapping is employed, but, of course, the drilling is slow, laborious work. If a man has plenty of time or plenty of help and wants to save on his explosives, I would recommend blockholing. If he is short of time and help and wants quick action, then mudcapping is the proper method to employ. Snakeholing is a between method. Boulders can be broken in that way in about half the time that it takes to blockhole, but, as a rule, twice the amount of dynamite will be needed to do the work. Snakeholing will sometimes merely throw a boulder out of the ground and it is then necessary to resort to a mudcap or a blockhole in order to break it up.

I trust this information may be of interest to your readers. Every day I run across farmers who would like to rid their fields of boulders but don't know how. After I tell them how simple and easy and inexpensive it is, many of them adopt my suggestions. Their pleasure at having their fields nicely cleared, enabling them to use the most modern machinery in their farm work, amply repays me for my advice.

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A Farmer With a Motto

By R. E. ALLEN

One of the reasons for the uniform success of Amos Schultz as a farmer is that he farms by this motto: "It costs nearly as much to grow a poor crop as it does to grow a good one. Grow the good one."

Mr. Schultz is making a practice of growing only good crops on his 110-acre farm near Worcester, Montgomery Co., Pennsylvania. Good farms are the rule rather than the exception in that neighborhood, yet the farm of Amos Schultz stands out even above the good farms roundabout.

The Schultz farm is possessed of almost every natural advantage. The land lies well, the soil is fertile and well drained. In short, all of the natural advantages are as good as one could desire; that is, any one except Amos Schultz. He isn't quite satisfied with conditions as they are, but very laudably is trying to better them. Any one who goes past the farm can see that he is succeeding.

The Schultz farm might be termed a dairy farm but it is in reality a general farm. Twenty-eight or thirty head of cows are usually kept and the milk is sold at the local co-operative creamery. Even though the cows do furnish a good share of the farm income the farm is general in that general farming is practiced and a general rotation followed. The rotation followed is a 4-year one and runs corn, wheat, clover and grass. Nearly all the farm except some woodland pasture and the farmstead is included in the rotation.

The farm buildings are worth speaking of at some length. The house is a big, roomy, comfortable one and the same might be said of the barns and other buildings. A complete electric system is being installed and soon many of the chores and household tasks will be done by "electricity," as the hands call it. A large tile barn is being built and two big 10x30 foot silos are going up beside it. Mr. Schultz is not forgetting his hogs, either, for he is building them a new home of tile and concrete. All the buildings are solid, substantial and well located.

At the head of the Schultz herd of grade and registered Holsteins is a regal looking grandson of King Segus Pontiac Alcarra and of A. R. O. parentage. A large production of milk is maintained throughout the year and it is all taken care of at the co-operative creamery. A test is made twice a month and Mr. Schultz's milk averages 3.8 per cent. butter fat. The milk is paid for on a butter fat and casein basis, 45 cents per pound being the price for butter fat and 16 cents per pound for the casein.

Besides being a dairyman, Mr. Schultz is quite a hog raiser. Seventy hogs are usually kept on the farm. Cholera is almost unknown among them. They are not kept as a by-product of the dairy, but rather a product by themselves. That is they are as important on the farm as are the cows. They are fed mostly with feed raised right on the farm and, as with the dairy, the manure produced is a valuable by-product.

There is one thing unique about the Schultz farm, considering it as a dairy farm. Dairy farms are usually considered nearly ideal as far as keeping up the fertility of the soil is concerned. That is, the manure produced is supposed to maintain the balance between plant food removed and plant food supplied. Mr. Schultz doesn't think that such is the case at all. He thinks that manure is all right as far as it goes, but it doesn't go far enough. So he uses 8 to 10 tons of high grade complete com-

mercial fertilizer a year to balance the plant food that the manure does not supply.

"I don't try to grow a crop without using fertilizer," says Mr. Schultz, "because my experience has taught me that fertilizer will give me a third larger crop than where manure is used alone. I believe in manure as much as any one but I don't believe that it is the whole thing. I spread it all over my farm and use fertilizer with it instead of putting manure on heavy as far as it will go and using fertilizer on the rest of the farm. My experience is that manure and fertilizer together is better than either one of them alone. I use them both together and get the ground in the best shape I can and trust to the season to do the rest."

It is one of Mr. Schultz's ambitions to beat his son Roy growing corn. The boy grew 117 bushels of shelled corn per acre in the corn contest. His father thinks that if he grows over 100 bushels an acre he will be a little ahead of his son. If the season continues favorable for corn, Mr. Schultz will probably realize his ambition this fall, for on July 24th he had the finest large field of corn the writer had seen anywhere in the Eastern States.

The corn was grown on heavy clover sod that had been top dressed with 6 tons of manure per acre. The ground was well plowed and the seedbed carefully prepared. A practically perfect stand was secured by the use of good seed and good planting and the strong, rapid growth of the corn was made possible by the application of readily available plant food in the form of 300 pounds per acre of a high grade ammonia-phosphoric acid fertilizer. No wonder that Mr. Schultz has such corn! Mr. Schultz takes particular pride in his wheat fields. He says that he would be ashamed of less than 35 bushels per acre and he takes 40-bushel yields as a matter of course. The 400 pounds of fertilizer per acre that he uses on his wheat helps to make his large yields so common.

"It costs me just as much to grow poor wheat—to plow the land, to drill it and seed it—as to grow good wheat, so why shouldn't I grow good wheat when it just takes a little extra in the way of manure and fertilizer?"

Potatoes and oats are grown by Mr. Schultz in addition to the other crops mentioned. They are not exactly part of the rotation, but very often they fit in conveniently and make it a 6-year rotation instead of 4-year. Mr. Schultz grows these two crops with the same care that he does his other crops. He uses 1000 pounds per acre of a good complete fertilizer on his potatoes and secures as high as 300 bushels of potatoes per acre. The oats receive 250 to 300 pounds of fertilizer per acre and yield proportionately.

The Schultz farm is quite a sweet place, for some 1500 pounds of honey are produced annually from the 20 hives that are kept out in the orchard of old apple trees. Altogether Mr. Schultz doesn't think his farm is such a bad place to live. A mention of his two automobiles and his four fine hunting dogs might give the impression that Mr. Schultz is an "agriculturist" rather than a "farmer" (see popular definition) but such an impression would be altogether wrong. He is a practical up-to-date farmer and farming, to his mind, is the science of getting the largest crops and at the same time making the soil richer. That isn't such a bad idea of farming to have, now is it?



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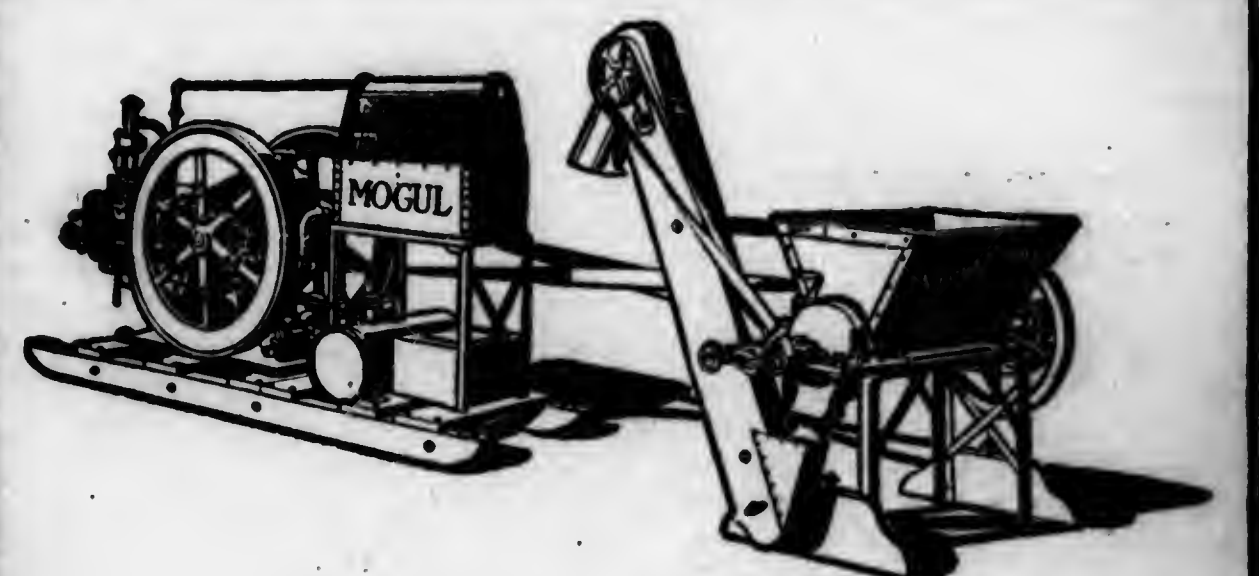
Hanes Separate Garments have Double Gussets to double the wear; a Comfortable, Staunch Waistband; Improved Cuffs which hug the wrists and won't flare out; a snug Elastic Collarette which never gaps; Elastic Shoulders with Improved Lap Seams which "give" with every motion.

Pre-shrinking keeps all Hanes Underwear elastic and true to size and shape. Seams are unbreakable where the wear is greatest. Give 'em the toughest wear you know how.

That's a lot of underwear for 65c or \$1.25—a whole lot more than you ever got before. Hanes is honest all the way through—no fills—just common-sense underwear for hard-working, big-muscled, thrifty men.

Don't waste money—buy Hanes and save money. See a Hanes dealer. If you don't know one, write us.

P. H. HANES KNITTING COMPANY
Winston-Salem, N. C.



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INTERNATIONAL feed grinders demand only about two copper pennies for grinding each bushel of feed. That's the ultimate average cost. That low average cost applies whether you use a small grinder with hand power or whether you require a large 30-bushel-per-hour-capacity grinder, running it with your light tractor or engine.

An International is the feed grinder you need, because, with three styles and seven sizes to choose from, all of the highest quality, you can get an International feed grinder of just the right type for your work. Type B International feed grinders are designed specially for grinding corn on the cob. There are three sizes, with 6", 8", and 10" plates. Type C is the small grain grinder, for oats, wheat, shelled corn, etc., and is made in 6" and 8" sizes. Type D is the heavy grinder for corn in the husk, Kaffir corn in the head, etc., and is made in 8" and 10" sizes.

Further information, covering every feature of International feed grinders and Mogul and Titan kerosene engines and tractors, is contained in booklets which we will gladly send. Write for them.

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OUR EXPERIENCE POOL

All our readers are invited to contribute their experiences on the topics under discussion. \$2.00 will be paid for the best, and \$1.00 for the next best contribution, and 50c for each other article published. Contributions must be in our hands 15 days before date of issue.

Topic No. 1207, Nov. 15.—Is the breeding and raising of horses on a small scale profitable for farmers? Give us the benefit of your experience and the conclusions you draw. What prices are good horses bringing in your vicinity? Limit manuscripts to 250 words.

Topic No. 1208, Dec. 1.—What provision have you made for next summer's ice supply? How do you cut and harvest it? Is your ice house above or below ground? Do you pack the cakes in or just dump them? What do you use to cover the ice? How much does your supply cost? Limit 250 words.

Topic No. 1209, Dec. 15.—We notice in our travels that a great many farmers in the East still shock and husk their corn in the field. If you are one of them, what care do you take of the fodder? Do you cut or shred it for feeding? If you feed it outside, what do you do with the stalks? Why don't you get a silo? Limit 250 words.

Topic No. 1206.—How do you pick, pack and market your apples? Do you sell them at harvest time or put them in storage? What prices are you receiving for this year's apples?

L. W. W., Delaware Co., Pa.—We have found that the keeping and storage quality of apples depends a great deal on the way they are handled in picking. The minute bruises which soon become apparent in storage, we have avoided by using round bottom, cloth lined swing-handled baskets for picking instead of the old-fashioned way of having a bag over our shoulder. By having a heavy wire hook on the basket so that it can be hung on a round of the ladder the picker has his two hands free and can work a great deal faster than if he had to hold it. When the picking basket is full it should not be dumped into a barrel or box but each apple should be placed carefully in, if first-class fruit is desired.

After the apples have been picked we always get them out of the orchard into a cool place as soon as possible. The old practice of leaving them in large piles in the orchard with the hot sun at times on them is exceedingly damaging to their keeping qualities.

When we have the time and labor necessary we like to go over the trees more than once, and each time take off only the ones which are ready. It is surprising what difference a few days in the fall makes in the maturity of an apple, and if the tree is relieved of some of its burden the apples which remain ripen very fast. This year we could not do this, but had to pick them all at once and we will have to sort them when they are sold in baskets and smaller lots to our customers in nearby towns. Apples are high in our vicinity this year. We are now receiving 30 cents a half peck or 80 cents a half bushel for them.

Miss I. E. B., Franklinville, N. Y.—We have several old orchards now bearing, and a young one that we have set out, believing that fruit in the future will increase, not decrease, in value. And then our family is very fond of fruit, and thinks that a farmer should grow all the kinds of fruit that will bear in his section of the country.

As apples and other fruit are only a side line on our farm they do not get as much attention as they should. Still we make quite a sum at times out of our apples. We pick the summer and fall varieties at intervals, picking the largest and ripest each time. This gives those left on the tree a better chance to mature. When the apples are picked they are put into bushel crates. We sell them in a large village nearby, to our butter customers (we have quite a large butter trade) and other individuals each Saturday; also at other times when going there on business.

When we pick our winter apples we sell all we possibly can to the same persons that we sold the earlier varieties to, and the rest we store in a root cellar and sell to private families and grocery-men during the winter.

Apples this year have been a fair crop in this section of the country, and are bringing 75 cents per bushel for the winter varieties. The summer and fall apples brought from 50 to 60 cents per bushel.

E. E. M., Ashville, N. Y.—My neighbor is an ordinary every-day farmer—not a scientific fruit specialist at all—but he knows a thing or two about

apples. He produces first-class fruit, picks in padded baskets, sorts on sorting tables from which he reserves the choice specimens, allowing the culls to roll off (in direct opposition to the popular method of letting the best fruit roll off and picking out the culls), packs in the afternoon, leaves the fruit to cool over night, and places in the cellar in the morning. The packages used are principally bushel and half-bushel boxes attractively labeled with his own private label, and the fancy grade is wrapped in paper. Practically the entire crop is sold to private customers, though little, if any, advertising has ever been done—the first sales were made to acquaintances in the city and these, in turn, brought more customers. Simple, profitable and very much to the point. Try it.

W. A. G., Vincennes, Ind.—As is so common throughout this state, entirely too many good farmers interested in apples growing along with much else, have retired to the towns and cities. The farms generally are left in fairly competent hands, but the orchards are not being well looked after. Those who spray, or see that it is rightly done, get large, fine fruit, and the trees keep vigorous and thrifty. We have no trouble in disposing of the good, select apples in the

orchards, but generally the local market is loaded down with the common stock. The prices now being offered by shippers, who will hold them in cold storage, range around \$1 per bushel for good, perfect fruit, that does not run under 2 inches in diameter. The larger sized, viz., 2½ inches in diameter, and guaranteed to run three bushels to the barrel, will be held for about \$4. However, New York apples, and some from other states, rather control what we can get for native stock, however good.

There is not a big crop of winter apples here this fall. Hence fruit men are not around as in good seasons. It is common for all the best fruit to be sold on the trees here by this time of the year. Not much of that has been done this fall, and perhaps will not take place. All the unsalable apples are evaporated, made into cider and converted into apple butter.

E. O. J., Woodlawn, Md.—We hand pick our fruit. Generally when Bartlett pears are picked the price is low, so we pick out all culls and place the fine ones in deep, tall baskets, setting them in the ice house directly on the ice, covering the tops of the baskets with matting. The Grimes Golden apples and Kieffer pears receive this treatment also—unless the quantities of these fruits are so great that the large ice house cannot take them. Each market day several baskets each of Bartletts and Grimes Golden are retailed in a Baltimore market at 15 cents a quarter of a peck. We retail these popular fruits until late fall by keeping them on ice. Our Ben Davis, York Imperial, Paragon, Stark

and Delaware Red apples are freed from culls, retailed as many as possible and sending surplus to a commission house. Every week in summer all small, fallen fruit is put in barrels and sold to jelly houses at 50 cents per barrel net; a

Are You Entering the Du Pont Land Reclamation Contest for Boys?

(See Page 412)

If so don't fail to write the story of your work in reclaiming your acre and enter it in *The Practical Farmer Land Reclamation Story Contest*. Full particulars on request. Write today to

THE PRACTICAL FARMER
P. O. Box 1321, Philadelphia, Pa.

Everything Burned but the Concrete

GEORGE W. O. MATHEWS, Superintendent of the Boys' Farm and Training School, Shawbridge, Quebec, says:

"In 1910 our wood barn and out-buildings were entirely destroyed by fire, leaving only a new concrete silo which had just been completed. Its scaffolding was still standing, and it [the silo] alone passed through the fire without harm.

"In 1912 fire occurred after the root cellar underneath the stable floor had been filled, and the roots were not burned at all.

"The silo has now passed through three fires and the concrete walls of the barn have withstood two fires, which we think is a pretty good

example of the value of concrete as a protection against fire losses.

"Fire again destroyed the barn in the spring of 1913. The fire commenced among the hay and straw on the second floor, and when we rebuilt we decided that this must not be possible in the new barn. So the hay mow floor is of steel beams and concrete.

"The driveway retaining walls, floors of the dairy, cow and horse stables, workshop and feed mixing rooms, the ceiling, floor and walls of the root cellar underneath the stable floor, the ceiling of the cow and horse stable, are all of the same permanent construction."

If concrete had no other advantage than fireproofness, you could not afford to overlook it. Fire prevention is the best fire protection.

If you intend building a silo, dairy, granary, corncrib, ice-house, milk-house, or any other farm building, use concrete. Send for a free copy of "Concrete in the Country." If you are interested in good roads ask us for "Concrete Facts About Concrete Roads."

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KANSAS CITY
Commerce Building

PARKERSBURG
Union Trust Building

SAN FRANCISCO
116 New Montgomery Street

ragon being sent direct to the farm for them. All good fallen fruit is retailed or sent to a commission house.

M. G. F., Dryden, N. Y.—Ours is not generally known as an apple country, yet this year we have a fine crop of apples everywhere. But the market is low. Because it has never been a crop of importance the farmers do not seem to know how to sell their apples, excepting to local grocers. A few who can spare the time peddle to city families, but this, of course, takes only a limited amount. We also had a fair crop last year. Then for the first time local produce buyers were induced to place cars for filling with loose apples, at 50 to 75 cents per bushel.

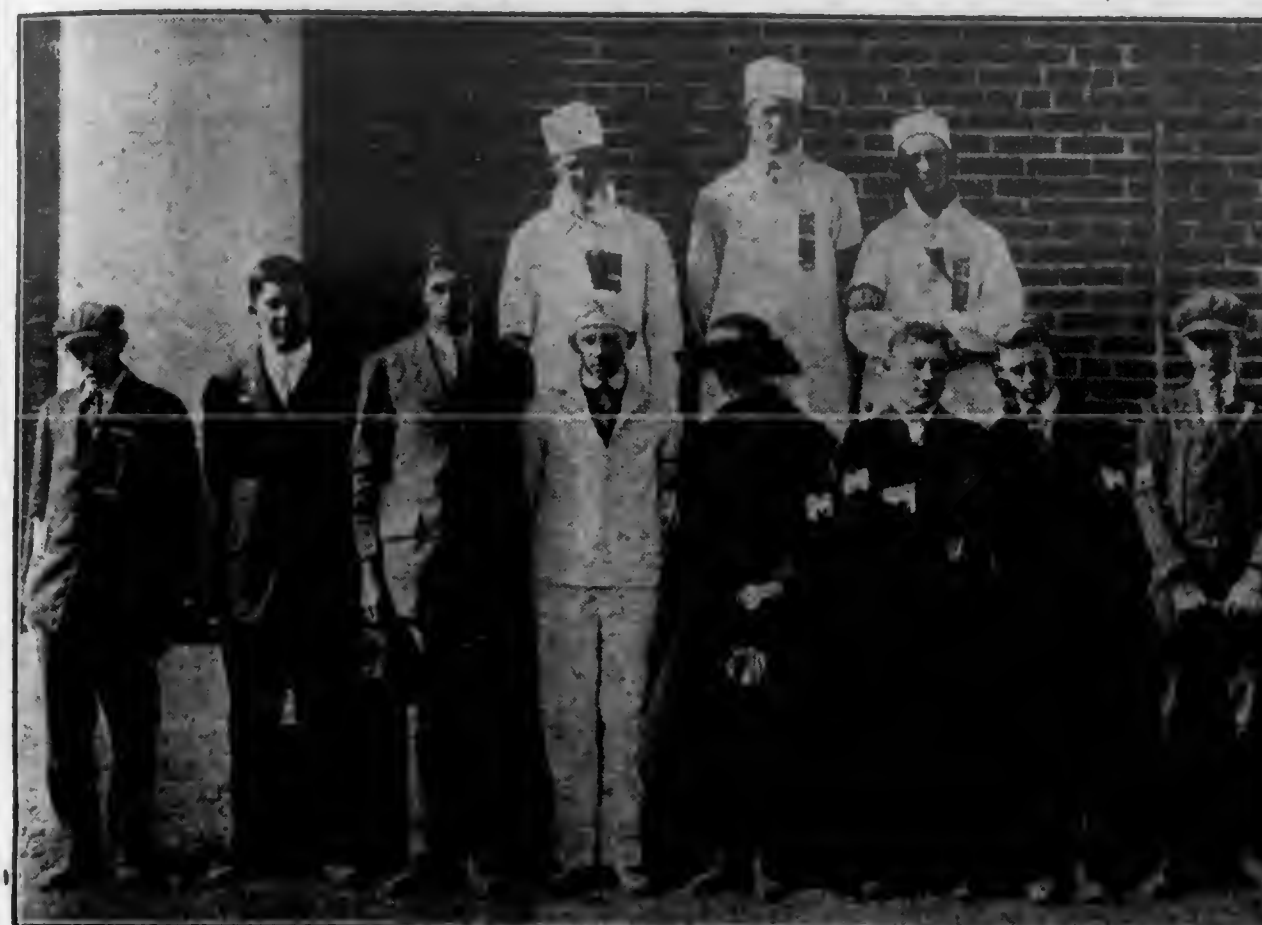
This will be done also this year, though we don't know as yet whether we can get that price or not. Very few here specialize on the crop enough to grade and pack a fancy quality, though those who do get much better prices. Our fruit, when sprayed and this year even the unsprayed, is equal in appearance, and better in flavor, to that of quite noted fruit sections, and the farmers begin to feel the need very keenly of better marketing methods.

We have a local canning company that will shake down our apples, pick them

The special program prepared by the committee will include the historical address, by State Master T. C. Atkeson, of West Virginia, and a sketch of the Seven Founders of the Order, by Mrs. Eva S. McDowell. Special musical numbers will be provided, former National Masters Aaron Jones and N. J. Bachelder have been invited to speak and a timely word for the future of the Order, as linked to its past, will be spoken by National Master Oliver Willson.

Boys' and Girls' Club Work

An exhibition of the work of the boys' and girls' clubs of the North Atlantic States was held in Springfield, Mass., Oct. 12 to 21 in connection with the National Dairy Show. The large Women's Building, having a floor area of 25,000 square feet, and a big tent for the pigs and chickens, were required to accommodate the entries. The young people of ten different states sent for competition 260 samples of potatoes, consisting of 20 tubers each; 160 entries of 10 ears of corn; 142 loaves of bread;



Winners in Boys and Girls Stock Judging Contests at the National The Young Lady is Ruth Wood, of Massachusetts

up and draw them away at 30 cents per 100 pounds, for all tart apples 2½ inches in diameter. This is, of course, a great sacrifice of the apples, yet when help is so very scarce as it is here we are glad to sell this way our fall apples and some of the less popular varieties of winter apples. We can always get 25 cents per 100, or about 10 cents a bushel for apples for cider. This year quite a lot of our crop will be sent in barrels, as unclassified fruit, to New York and New Jersey private families at about \$2.50 per barrel.

National Grange Meeting

The meeting of the National Grange in Washington, D. C., this month, will provide opportunity for a large number of our readers who are members of the Grange to acquaint themselves with the leaders of the organization. All work except conferring the higher degrees is done in the fourth degree and any member in good standing will be admitted.

The meetings will open Tuesday evening, November 14th, with a public reception, which will be addressed by President Woodrow Wilson, and continue until November 24th. Thursday evening the fifth and sixth degrees will be given. Friday morning a conference will be held for all lecturers in attendance. The seventh, and highest, degree of the order will be conferred Friday afternoon in the National Theatre. The assembly of Demeter, to which only seventh degree members are admitted, will be held Saturday morning, November 18th.

The Golden Jubilee or 50th anniversary of the founding of the Grange will be celebrated Saturday afternoon.

Each state was entitled to as many teams of three, for the judging contests, as there are counties in that state. The teams from Massachusetts were awarded three first prizes as winners of the market gardening, sewing and bread classes. Pennsylvania took first prize in the poultry judging, New Jersey first for hogs, Maine first for potatoes, Connecticut first for corn and Rhode Island first for canning.

A Pennsylvania boy, Merrill Tate, of Mercer county, won first prize in the stock judging contest. Ruth Wood, of Massachusetts, the only girl in this class, made a score of 505 out of a possible 600 points, and won second prize. Young Tate being interested in Holsteins, took a bull calf of that breed as his premium. Miss Wood having second choice, took a grandson of Sophie XIX, the champion "butter cow" of the world, as her premium.

Prof. O. H. Benson, of Washington, the national club organizer, said, after inspecting the exhibition of home canning, that it was the largest and finest exhibition of such work ever assembled in this country, probably the best in the world.

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FREE, Postpaid My New 1916 Book, "How to Judge Engines." Tells you where others use three, advantage of cylinder and base separate—no overhang of cylinder, vertical valves—no inside wear, safety spark shift for easy starting, automobile style of ignition, and many other distinctive WITTE features that you cannot get in other engines. Write me today for this Free Book and latest WITTE prices.—ED. H. WITTE, Pres.

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Do It Now, while this offer is good. My best offers are going out Now—just when you need an engine.

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THE FARM ENGINE THAT WORKS
Built and guaranteed by the largest producers of farm engines—simple, durable, powerful—four cycle, vertical valves, make and break ignitions—every part interchangeable—fully tested. Guaranteed to develop Rated H. P.
SAVES FUEL, TIME, LABOR, MONEY
Write for big illustrated Engine Book today
Full Line Detroit Engines 2 horsepower up
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Valveless Mfg. Co., Successors

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is the one you want
No. 10, the latest model of our popular Horse Shoe Brand Wooden Pumps. The pump that is more easily operated and repaired than any other. Superior to the old log pump and the "Old Oaken Bucket", and with none of the objectionable features of iron pumps.
When repairing is required—though seldom necessary—you can do the work yourself without removing the pump from well.
It has 7x7 Head, closed brackets to keep out sticks and stones, long stroke, 3 inch porcelain-lined cylinder with brass piston fitted with best leather cups, and removable brass check valve with brass seat. It is adapted for wells 10 to 50 feet deep.
Write for prices.
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MAIL THIS COUPON NOW
I understand (despite War's increase in price) you have low contract for miles of best hand-wire steel fencing. So send new catalog free (prices starting 16¢ instead of 18¢ per rod.)
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Get your contribution in early. If it does not reach us at least 15 days before the date of issue, it will be too late.

It seems to me that both the kind and amount of work required must necessarily vary with every individual household. Two homes seldom have exactly the same duties to do that are within the capacity of small children, and work for discipline alone, that does not really help, is hardly to be recommended. My little girl takes care of her own play things—she isn't such a model child that

Our children, aged 8 and 10, are required first to wait on themselves whenever possible, put bed to air, dress themselves and assist the younger children. They set the table, feed chickens and rabbits and carry in wood.

It is well to teach children that cer-

him some time to himself and do not interrupt except in extreme necessity. Constant interrupting of a child's work or play is a crime against childhood. It prevents his accomplishing anything and tends to permanent discouragement and failure.

Ordinarily, I believe, one hour's work in morning and another at night is all that is fair to require of a child, and

Our Latest Fashion Book

Owing to the number of departments in The Practical Farmer, we are unable to illustrate as many patterns as we would like; therefore, we publish for the benefit of our readers, four times a year, a quarterly fashion magazine called "The Woman Her Own Dressmaker," which illustrates hundreds of the most practical styles for ladies, misses and children, and tells how to make all kinds of clothing at regular prices. Each book is 10 cents a copy, but we will send it postpaid for 5 cents, or if you will order it at the same time that a pattern is ordered we will send a copy of the latest 2 cents postpaid.

FASHION DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

Owing to the numbers departments in The Practical Farmer, we are unable to illustrate as many patterns as we would like, therefore, we publish for the benefit of our readers, four times a year, a quarterly fashion magazine called—“Every Woman Her Own Dressmaker”—which illustrates hundreds of the most practical styles for ladies, misses and children, and tells how to make all kinds of garments. The regular price of this book is 10 cents a copy, but we will send it postpaid for 5 cents, or if you will order it at the same time that a pattern is ordered we will send a copy of the latest at 2 cents postpaid. Address:

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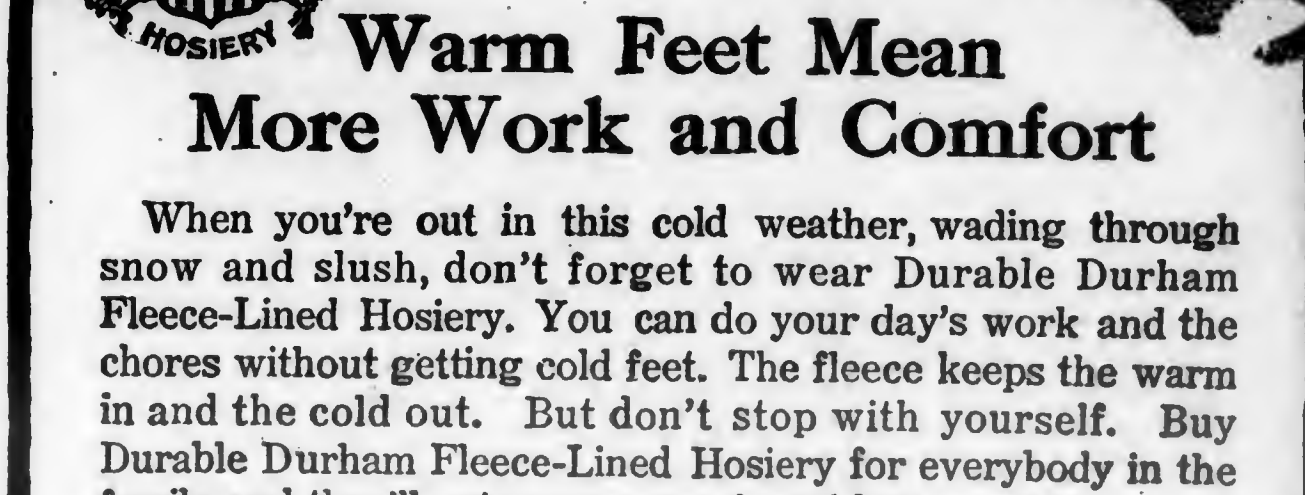
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Mrs. N. L. A., Massillon, O.—We are a family of six—father, mother, two girls and two boys, and we all love the farm but are not on one at present—expect to be next year. The past summer we have lived just within the city

May I say a few words about another way the children are earning money? There has been a school savings system started in the schools here. The teachers sell stamps for one penny apiece; these are pasted in books furnished by the loan company; each book holds 50 stamps, and when it is full the child may deposit it at 5 per cent. interest and get another book. I give them a penny for every 50 stamps they get, and 5 cents for every one hundred they have on their report cards. They take this money and buy stamps for their books.

Write today for particulars to

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is built to stand rough wear and strain, because it is **made strongest where the wear is hardest**. The heels, soles and toes are heavily reinforced; the tops are knit on to stay; the fit never changes, and the famous Durham Dyes give fast, sanitary colors. The Mrs. will realize these superiorities because she'll have less darning work.

The storekeeper sells Durable Durham Hosiery for 10, 15 and 25 cents. When you are there look at the 25-cent Mercerized, Durable Durham Hosiery.

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Healthful, Convenient
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ask about the Ro-Ban Waterbath—Hot and Cold, RICH,
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Write today for 20 plain, Art Post Cards
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Please mention The Practical Farmer

Laws Protect Fur Bearing Animals

In spite of the steadily diminishing supply of animals from which the finer furs are obtained, the value of the raw fur production of the United States and Canada has grown enormously in recent years, according to Farmers' Bulletin 783, Laws Relating to Fur-Bearing Animals, 1916, recently issued by the U. S. Department of Agriculture. The earnings of the trappers of North America in 1915 are estimated by the author of the bulletin to have been not less than \$20,000,000, although exports of raw furs for the year were only about half the normal proportion. In large part, the industry owes its continued success, the bulletin indicates, to legislation passed in recent years protecting fur animals in much of the territory where the business is important.

As a result of the legislation for the year the total number of states protecting one or more species of fur-bearing animals by statewide laws is increased to 39 in addition to Alaska. The bulletin contains an outline of the provisions of existing laws by states and the provinces of Canada. Copies of this publication may be had free on application to the Department at Washington, D. C., as long as their supply lasts.

Pennsylvania Corn, Fruit, Dairy Products and Wool Show

Rivalry between the corn and fruit growers of the various counties of Pennsylvania promises to be keen at the State Corn, Fruit, Dairy Products and Wool Show which will be held at Harrisburg on January 23 to 25 under the auspices of the Pennsylvania Breeders' and Dairymen's Association, in co-operation with the Pennsylvania Department of Agriculture, State Horticultural Association of Pennsylvania and other agricultural organizations.

Efforts are now being made to have a monster gathering of persons interested in agriculture at Harrisburg during the week of January 21, and the show of Pennsylvania grown corn, fruit, dairy products and wool is to be a statewide affair which will be the chief feature of the week.

Maryland Week at Baltimore

Maryland Week, which has become one of the leading agricultural events of the East, will be held in the Fifth Regiment Armory, Baltimore, November 14 to 18. This is a farm products show which attracts thousands of people not only from the adjacent territory, but from the neighboring states. One feature which has been developed, is the contest of Grange and Farmers' Clubs. Each organization is allowed an equal amount of space and is judged according to the quality, quantity and attractiveness of its exhibit. Many of these booths have a greater display of farm products than the average county fair. The florists, bee keepers, fruit and grain growers of the Peninsula all make extensive showings of their products in competition for the premiums offered.

Salt as a Potato Fertilizer

Considerable interest has been shown this year in common salt as a substitute for potash in fertilizer. A number of the farm demonstrators in New Jersey, who are working in co-operation with the division of extension of the State Agricultural College, have been testing its effect upon the potato crop. Mr. W. B. Durvey, farm demonstrator for Monmouth county, reports the results obtained from tests conducted under his supervision. The tests were made on nine farms; in most cases on quarter-acre plots. Different types of soil were

selected, in order to get results that would be conclusive. The salt was applied broadcast as a top dressing in most cases soon after the potatoes were planted, and in some cases after they were up. The quantities used were 300 pounds and 500 pounds to the acre, no potash being used in the fertilizers applied. During the growing season the salted plots were noticeable at considerable distances because of their lighter green color. In only one case was an increase in yield obtained as a result of the use of salt. In two cases approximately the same yield was secured with and without 300 pounds of salt. In all other cases the yield was reduced, in one instance as much as 24 barrels to the acre. On one farm an application of 300 pounds of salt reduced the yield 7 barrels to the acre, and 500 pounds, 15 barrels.

Bulletin Helps for Farmers

An important bulletin of 62 pages on "Sheep Raising in Pennsylvania," has just been issued by the Department of Agricultural Extension at Pennsylvania State College (State College, Pa.). This bulletin, which is by Prof. B. O. Severson, is particularly timely in view of the movement to increase the raising of sheep on Eastern farms which is now receiving much attention; the introduction states that the object is not to advocate sheep raising as a main feature of farming, but rather as a detail in general farm practice. Sheep raising is a detail of farming that returns a profit when flocks are properly managed and it is believed that wool and mutton are by-products which Eastern farmers cannot afford to overlook. This well written and copiously illustrated bulletin is one which we wish all our farmers could read carefully and we recommend that it be sent for. It is, of course, free on request.

Thoughtful farmers who are devoting some grey matter to the consideration of the commercial side of farming, will appreciate Bulletin No. 409, "Factors Affecting Interest Rates and Other Charges on Short-Time Farm Loans," issued by the U. S. Department of Agriculture. Offhand, it seems like a comparatively simple operation, this borrowing of money to use in one's business—merely a question of "I need the money in my business and you have it to lend;" but there are a number of things that must enter into the consideration given such an application for a loan by the banker or financier before he is willing to grant it. It is well for the prospective borrower to know in advance exactly what factors will enter into such consideration, and this bulletin makes quite clear what these factors are; the personal character of the borrower, his business ability and business habits, the method and character of the farming done by him and the purpose to which the borrowed money is to be put are among the factors which are treated on in this pamphlet; the question of what co-operation among farmers can do to improve their borrowing capacity at banks is taken up also. Altogether this is a bulletin well worth careful study and we recommend that our readers write to the Department for it. It will be sent free on application.

Two recent circulars in the Agricultural Extension Service of the University of Missouri College of Agriculture (Columbia, Mo.) which will be of particular interest to our farm women are "The Cold School Lunch," by Bab Eell (No. 10), and "Making Light Bread," by Addie D. Root (No. 11). Both of these circulars are full of useful information to farm mothers and housewives. Either or both will be sent free on application to the College.

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Cash Prizes for Farmer Boys

are offered by The Practical Farmer for the best stories of the work done in its territory in the Du Pont Land Reclamation Contest for Boys. (See page 412 in this paper.) You may win one of these prizes as well as one of the Du Pont prizes if you write promptly for information to

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The Practical Farmer Live Stock and Dairy Section

EDITED BY W. H. TOMHAVE

Selecting Brood Sows

By W. H. TOMHAVE

The time is approaching when the brood sows for the coming year must be selected and prepared for mating. It is well to go over the list of old sows and cull out the ones that have not been producing good sized litters and those that have failed to raise their pigs. If the poor litter produced is the first one, there is some justification in keeping the sow for another season. If, on the other hand, she has had several small litters or has not properly cared for them she is not a profitable brood sow and should be disposed of. In order to improve the standard of the breeding herd and possibly enlarge it, the more desirable gilts from among the spring pigs should be saved and developed as brood sows. In selecting these young sows, it is important that the record of the dam be kept in mind. They should be selected from the large litters and from the sows that appeared to be good mothers. The tendency to produce large litters is inherited to a large extent from the sire and dam, and for that reason is an important factor in the selection of the foundation herd. If the foundation animals are selected from large litters, this desirable characteristic will become fixed in the herd and greatly enhance its value.

For brood sows secure those that have a long, deep body and plenty of size or scale. Smoothness and length of body are closely associated with prolificacy. In addition to these points they should have plenty of bone and stand well up on their feet. A good, strong, well-arched back should always be sought for. Such a back indicates a strong, well-muscled loin, which always adds to the value of a market hog.

The length of time to keep a brood sow in the herd will depend upon her ability to breed and the manner in which she cares for the litter. A good brood sow should be kept in the herd as long as she is a profitable producer. As soon as she fails to breed or when she fails to properly care for her litter, she should be discarded. This brings out the importance of keeping a complete record of what each sow does from year to year, so that the unprofitable individuals may be sold on the market. The best time to do this culling is during the fall, before the sows are put into winter quarters.

The condition of the brood sows at breeding time also has a tendency to influence the condition and size of the litters. The sows should be in good, thrifty condition and not too fat. If they are too fat there will be some difficulty in getting them bred, as they will not conceive as quickly as when they are in fair condition of flesh and thrifty.

The time to breed will depend upon when it is most convenient to have them farrow. The gestation period of swine is four months, or from 112 to 116 days. On farms where there are good facilities for housing during farrowing time, the breeding can be so managed as to have early farrowing, during the months of February and March. This also

makes it possible to develop the young pigs in such a manner as to permit of the use of an abundance of pasture during the growing season. It has the further advantage of getting the pigs ready for market early in the fall before the heavy run of market hogs are received. On such farms it will be necessary to have an ample supply of feed to put the swine in market condition before the bulk of the season's corn crop has been matured. If the housing facilities are not of the best, it is better to breed the sows for March and April farrowing, as it is easier to save the litters. This again will depend upon the section in which the swine are grown. In sections where the season is more advanced the sows may be bred for early farrowing and little or no difficulty encountered in saving the pigs.

The winter quarters of the brood



A Group of Guernseys on the Farm of Mr. Mortimer Schiff, at Oyster Bay, Long Island

sows should be comfortable but need not necessarily be expensive. Very often straw sheds can be made use of to good advantage. The sleeping quarters should be kept well bedded so that they are warm and dry. The winter quarters should be so managed that the sows can get plenty of exercise. If necessary, feed the sows some distance from the sleeping quarters or scatter shelled corn on the ground in the yard where they can pick it up and get the amount of exercise that is needed to keep them in good physical condition.

Live Stock and the Utilization of DeKalb Soils

Live stock is essential for a permanent and economical system of agriculture. This fact has been demonstrated many times in all sections where farming has been carried on for a number of years. We have many examples of such conditions in Pennsylvania and the East where during the past decade many farms have been abandoned because the soil became impoverished and the fer-

The Philadelphia Milk Conference

A conference of milk producers and distributors was held October 19th at the Philadelphia Chamber of Commerce, for the purpose of giving the farmers and the dealers a chance to present to the public both sides of the milk problem. A great deal of interest had been aroused in the meeting which attracted about 200 men, who represented all phases of the business. For three hours various speakers presented reasons as to why the price of milk should and should not be advanced.

Milk producers in the four states which supply the Philadelphia market have lately been forming a close organization and have come to the conclusion that 5½ cents a quart for milk at the farm is not an unreasonable price to ask for it. The recent successes of similar movements, especially in New York City, where the dealers granted the farmers' demands, but only after a costly strike,

\$50; feed, \$2555, and labor, \$730; or a total of \$3535, from which he deducted manure valued at \$200, bringing his net expenses to \$3335 for the year. The 20 cows gave 58,400 quarts of milk, which thus cost Mr. Dixon an average of .0571 to produce. It was noted that he made no charge for interest on his investment nor for his personal labor.

Chas. F. Preston, Chester Co., Pa., farm agent, who has done a great deal to organize the producers in his county and lower Lancaster county, appeared before the conference in their interest. Mr. Preston gave the following figures of the average cost of milk per quart to the producer: Massachusetts, 1896 to 1911, 5.45 cents; Connecticut, 1907 to 1911, 4.7 cents; New Jersey, 1911, 4.9 cents; New York, 1911, 4.9 cents, and Maryland, 1911, 4.9 cents. These figures were obtained by the state experimental stations except in Maryland, where they were compiled by the Cow Testing Association. The average cost for the upkeep of cows on the farm of John Welsh Dulles, West Chester, according to Mr. Preston, was \$173 a year. Mr. Dulles found this was too high to have a profit and he sold his herd. Refuting the assertion that the dairy business was only a side issue of the farmers, Mr. Preston declared a survey of 378 farmers in Chester county showed that 40 per cent. of their gross income was from dairy products.

As a special investigation by the department of agriculture at Washington accurate cost accounts, down to every half hour's time, were kept on the farm of A. B. Huey, Chester Co., Pa. This showed that during 1913 milk cost Mr. Huey 5.2 cents a quart. The statement was also made that during the past year there have been more farmers sold out by sheriff than the total of three previous years.

Harold D. Harker, of Pemberton, N. J., said he represented eighty per cent. of the milk producers of Burlington county, and that the average cost of production was 4.8 cents. A price of 5½ cents to the farmer, in his opinion, was a necessity.

All the large Philadelphia distributors and a number of the small ones were represented at the meeting. They agreed that the producers ought to receive more for their milk but were of the opinion that the advance asked was too much and would react to the hurt of the farmers. According to their reasoning, the advanced price would flood the market by drawing in all the milk in this territory now converted into butter, cheese and other dairy products. They also contended that it would develop the industry in distant territory to such an extent that the increased production would force lower prices. They warned the farmers that there was a growing demand for and sale of substitutes for fluid milk.

When asked to give figures of the cost of distributing the milk one of the big dealers said that his firm was willing at any time to open its books to the farmers. He said that it cost one-half cent a quart to run the cooling station in the

(Continued on page 410)

To All Practical Farmer Boys:

October 21, 1916.

Dear Boys:

What do you know about the Du Pont Land Reclamation Contest? Have you read the announcement of cash prizes offered to enterprising farmer boys who want to show their parents that they have the energy and ambition to "make two blades of grass grow where one grew before"—in other words, to turn into real farm land what has heretofore been a waste place, an eye sore, a part of the farm that costs taxes but earns nothing?

The President of the United States has said in a public address that in his opinion the most important work for the farmers of this country is to put more land in cultivation and to make the waste acres productive. It is to help along this thought and to encourage the rising generation of farmers, on which so much of the future prosperity of this country depends, that we have offered these cash prizes to the boys who make the best showing with their respective acres of waste land.

Do not hesitate to take your part in this contest because of doubt as to whether you will be one of those fortunate enough to win a cash prize. Every boy who does his share is bound to be a winner in a much larger sense than the winning of the cash prizes, because he will have shown that he is not a mere boy but is taking a man's interest in the future of agriculture and of his own folk's farm in particular.

If you enter this contest and succeed in converting your waste acre, think of the impression it is going to make on your father and your mother. Think how it will prove to them that you are a serious factor to be reckoned with in the future upbuilding of the farm. It is going to do a whole lot to make a man of you, to prove in fact that you already have those manly traits that every live boy feels anxious to demonstrate.

For two reasons the time to enter this contest is right now—one is we are just entering the long period when farm work is least pressing; the other is that we can help you a whole lot in planning your work, giving you advice and encouragement. All this correspondence takes time and the more you plan before you start your work, the more likely you are to succeed. Remember it makes no difference to us what methods you use in reclaiming this waste land; the prizes will be awarded impartially without regard to the methods or materials used. They will be awarded solely on the basis of the degree of improvement effected in the land as shown by its original waste condition and its later production.

Remember this contest is nation wide and it may very likely be that no other boy in your county has yet entered. The prizes are divided sectionally so that you are not in competition with boys all over the United States, but only with boys in your section of the country.

Sit right down now and write me a letter. Tell me all about the acre on your farm which is now valueless and which you believe can be reclaimed. If I do not think it is feasible to reclaim it I will tell you so frankly, but if I agree with you in your judgment I will do everything in my power to help make your efforts successful. Write me fully, giving me all the details, and your letter will receive my personal and careful attention. I am a practical farmer and was a boy on the farm just like you and can fully sympathize with you and understand just what you are trying to do and what you are up against. Just so you can feel that you know me, I am having my photograph reproduced in this letter.

Very truly yours,

J. H. Squires, Agronomist,

E. I. du Pont de Nemours & Company,
Wilmington, Delaware.

P. S. If you did not read our announcement of the cash prizes in the Practical Farmer of September 15 and October 1, let me know and I will send you full particulars.



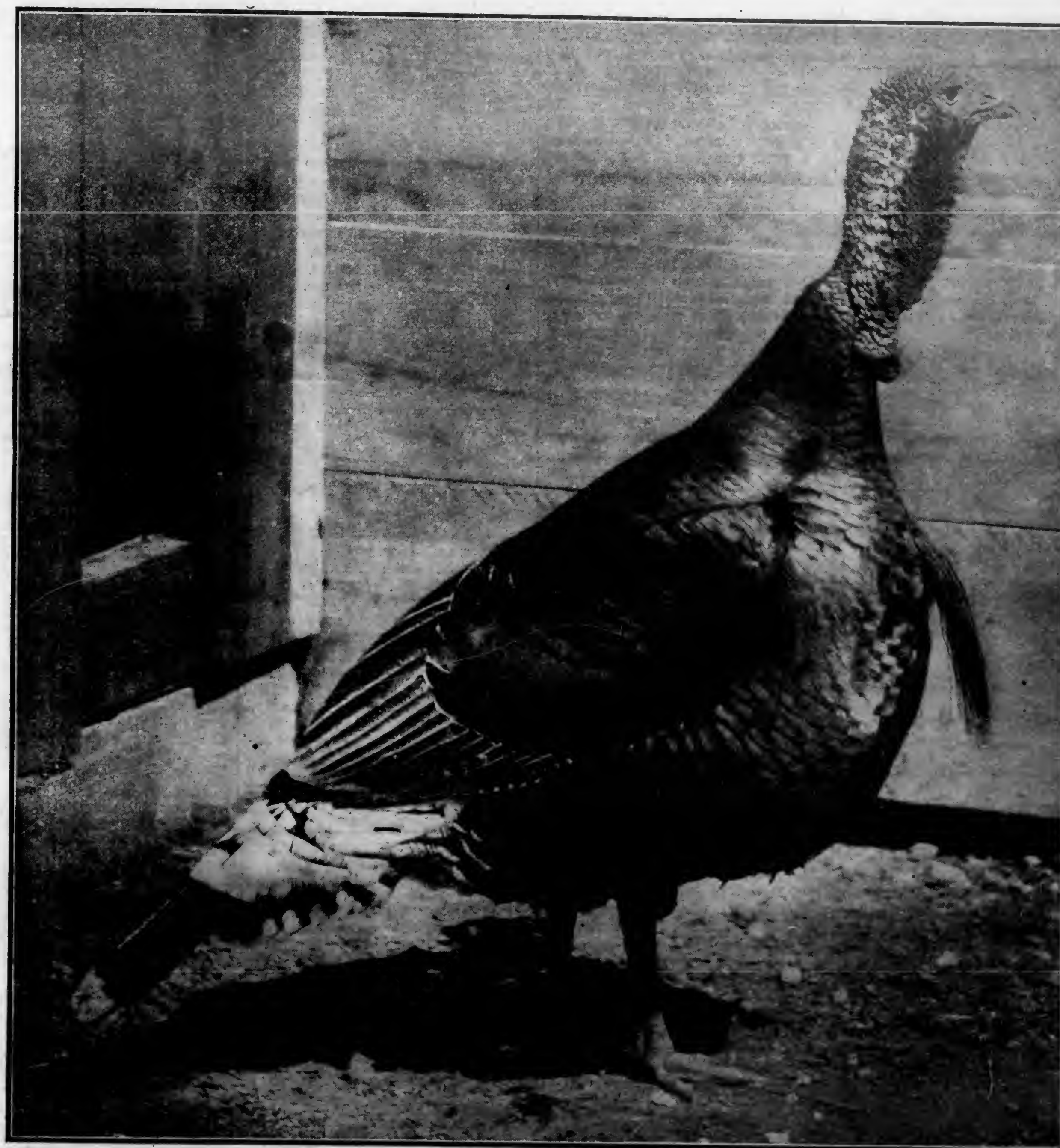
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The Monarch of the Month

Preparing Furs for Market

(This is the second of a series of three articles on the subject of "Fur Trapping for Farmers." We hope that these articles will enable a great many of our readers to secure some "extra money" from the many wild fur-bearing animals found in the Eastern United States. The first article appeared in our issue of October 15th, and the third one will be published in the near future.—Editor.)

The manner in which you prepare your furs for market is a big factor in the sale of your collections, and we cannot too strongly urge you to take special pains in preparing the furs. A prominent fur dealer once made the remark that "it is almost impossible for any one to make his furs look too good." Many dollars are lost each season by careless trappers, who, after enduring many hardships to get the fur-bearing animals, render the skins almost worthless by the process of treating them.

It is well to remember that the fur dealer who examines your furs will invariably throw into the second and third grades (which naturally means a poor price) any skins that are either badly shot, damaged in any way, or not properly stretched and dried. It is not only the amateur trapper who ignores the rules regarding the proper preparation of skins, but some old-timers, when in a hurry, are apt to make the same mistake, which, of course, is costly to them. We therefore give a few pointers on the proper method of skinning, stretching and curing the various animals, and which we are sure will be helpful to any of our readers who trap fur bearers, whether beginners or experienced trappers.

First of all, we advise you to attend to the skinning of the animal as soon as possible after it is dead; for the skin naturally sticks to the meat if allowed to get cold. The next thing after removing the skin from the animal is to scrape off all superfluous flesh and fat, but be careful not to go too deep so as to cut the fiber of the skin.

The following furs should be taken off the animal open; that is, cut down the belly from the head to the tail: Raccoon, bear, badger, timber wolf and beaver. Mink, muskrat, skunk, civet cat, opossum, lynx cat, coyote, otter, house cat, white weasel, martin, wild cat, fisher, lynx, wolverine and the entire fox family, should be eased—that is, not cut open. In skinning the last named fur-bearers, the cut should be made crosswise just under the tail, large enough to pull the body through. The skin is thus pulled off, and leaves the fur on the inside and the pelt out. Dry the furs carefully. Do not use salt, alum or any other material for curing the skin, for these injure the skin for dressing, and frequently lessen its value. In drying your furs they should be kept in a cool, dry place, out of the direct rays of the sun, and away from any fire. In drying the skins it is also important that they should be stretched tight. However, by all means, do not over-stretch your furs, for in doing so you spread the fur over a large surface, and make it thin, and lacking in richness. Immediately after removing the pelt from the body of the animal it should be stretched on a wooden or patent steel stretcher. The latter, of course, is better, because it shapes the hide uniformly, and dries it much more quickly; furthermore, the skin is removed more easily. Wooden stretchers should be made of thin boards fashioned to fit the skins. The pelt must be nailed, so that it will retain its natural shape. It is best to leave the skins on the stretchers until you are

ready to dispose of them, for the simple reason that they will hold their shape much better. Always let the pelts hang in the air if possible, for even when they are dry, and thoroughly cured, they will be better preserved where there is a steady circulation of fresh air. As to the length of time that is required for furs to dry, there really is no definite time. This to a certain extent depends on general weather conditions and climate. If you are located in the South it will naturally take longer for the skins to dry than it would in the North. Furthermore, it depends upon the kinds of fur, and where they are placed. A muskrat skin will dry much sooner than a skunk. Then again, skins placed where there is a continuous circulation of air will be ready much sooner than those which are not so placed. It is advisable that opossum and muskrat tails be cut off; also coyote and wolf hoofs are absolutely worthless, and only add to the transportation charges. Above all, do not forget that you will be well paid for the time spent in putting your raw furs in the best possible condition.

Now that the skins are dry, the next thing is the shipping. Take special pains to pack the skins carefully. Don't throw the furs into a bag "any old way," place one skin flat on another and tie them together. Always place a tag inside with identification marks, so that the parcel can be identified in case the outside tag is torn off. All raw furs (except green skunk, which have an unpleasant odor) should be packed in small bags or sacks. Green skunk skins must be packed in air-tight boxes, otherwise the transportation companies can legally refuse to carry the shipment.

In later issues of The Practical Farmer we shall endeavor to give you practical hints on trapping the principal fur animals, namely, skunk, muskrat, mink, opossum, etc. If you will follow our instructions carefully on this subject, you will find that your net earnings at the end of the season will be far greater than in previous years.

"Feed de Fish"

CLIFFORD E. DAVIS.

Away back in my "salad days" I read a story of one man who could catch fish when no one else could. Finally the boys found out that every week he fed the fish at certain places. An old negro said that whether you wanted fish or crops you "must feed de fish," and I find it so. If you are feeding hogs, calves, horses or cattle you must feed up. A stingy allowance will not do, for a hungry hog never fattens, nor does a hungry horse work well. It is the same with growing rye, vegetables, wheat, corn, grass or fruit trees. At this late day there is hardly a farm so rich that the soil does not need either lime, humus or manure. For years I have noticed the vast difference, striking to the eye, between a fertilized plot, and one in the same field not treated. Every farm has the germ of prosperity in its ashes from the kitchen, the droppings from hen house, pigpen and cow shed; and if these are allowed to waste when hungry fields mourn for them, the crop will not be a bumper one. If you want eggs you must feed the hens liberally on the right food. If you want dairy products you must feed the cow the grains and succulent food that will produce the rich milk. Every farmer rejoices in bountiful crops, and plenteous harvests; and a full egg basket and a big churning come in

handy, but he cannot expect any of them from poor, boney hens, dripping lice, gaunt, starved cattle, gnawing over denuded pastures; or from hard, barren fields, where never a load of manure, clover or any fertilizer was put in the memory of man. He must "feed de fish." The Bible says, "The liberal soul shall be made fat," and I cannot but think that this applies exactly to the sowing of fertilizer or spreading of manure. It takes nerve to plow under a crop of clover in full bloom instead of cutting it for hay; but the resultant crop of corn or potatoes will show that the fish were fed in this field. The trouble is that most farmers want to hang on to a good thing too long, and get two crops from one feeding. But by letting rye or wheat follow the clover-sod grown corn or potatoes, with more clover seed sown in it in early spring, the continued fertility is assured.

Maryland.

Advantages of a Good Water System

The number of farms in the Eastern United States that could put in a good gravity water system is almost without number. There are about 220,000 farms in Pennsylvania, and many thousands of them could have a good water system without any very great cost.

If one only stops to consider the amount of labor saved the farm women, the cost of a water system would not seem at all exorbitant. The farmer does not usually hesitate very long when it comes to buying some labor saving machinery for use in the fields, so why should not the good housewife have some conveniences for her use. Think of the energy required to pump and carry the amount of water used in the house during the day, and also the number of extra steps required if the water must be carried from a spring at some distance from the house.

The water system will not only be for the house, but for all the farm buildings as well; the barn, pigpen, chicken coop and any other buildings in which you may want water.

If this system is put in, think of the many conveniences that can be put in use. Hot and cold water in all parts of the house, bath room and inside toilets. The pleasure of the bath alone is one great factor in favor of water in the house. After a hard day in the field, or at any labor about the farm, a nice refreshing bath is surely something pleasant to look forward to.

It will behoove the farmer to look over the good springs that he may have and begin to think of something of this kind. The cost is not so great in most cases and the pleasures of one year will convince the owner that he would not dispense with it for many times the cost.—Chas. G. McLain, of Pennsylvania Dept. of Agriculture.

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Top-Dressing Grass Lands

By A. E. GRANTHAM

THE importance of the hay or grass crop in our systems of farming is often underestimated. The hay crop generally receives less attention than any other farm crop. From the earliest days of husbandry the old proverb, "No grass, no cattle; no cattle, no manure; no manure, no crops," has had full significance. An increase in the grass crop means soil improvement. The value of a sod for corn or potatoes is known by every practical farmer. To fall in getting a stand of grass means not only a lack of forage, but also a final loss in soil fertility. The adaptability of a large portion of the Eastern States to hay production, and the proximity of large markets, together with the fact that the grass crop responds as readily to fertilization and good culture as other farm crops, should be an incentive to the grower for giving special attention to the growing of grass.

The average yield of hay per acre in the Eastern States is not much over one ton. That it is possible to increase this yield not only through better methods of seeding, but also by the proper treatment of grass

soluble form like nitrate of soda. The clovers are more stimulated by the use of phosphoric acid and potash, particularly the latter. All fertilizers used in top-dressing should be applied in an available form, as the grass needs the plant food immediately. Mixed seedings, such as timothy and clover, should receive a fertilizer made up of the three elements of plant food. For timothy alone the application should consist largely of nitrate of soda with smaller quantities of phosphoric acid and potash. The best forms of fertilizers for top-dressing clover are acid phosphate, or basic slag, and muriate of potash. No nitrogen should be used on clovers. The clovers, particularly crimson and red clover, are often greatly stimulated on light soils by top-dressing with a mineral fertilizer during the latter part of the winter or early spring. Since these fertilizers are not likely to leach away they may be put on at this time without any danger of loss.

Manure may be used very satisfactorily in top-dress-

pounds per acre. This mixture is particularly recommended where the land is under rotation.

Where a large proportion of clover is desired, or on clover alone, the following may be used: Acid phosphate, 250 to 350 pounds per acre; and muriate of potash, 50 to 75 pounds.

If mixed grasses are to be kept down for more than one year the character of the fertilizer will have much to do in determining the nature of the crop the second year. The nitrogen will stimulate the timothy so that the clovers will be crowded out rapidly. If the fertilizer is composed largely of phosphoric acid and potash the clovers will occupy a large part of the cutting. Where grass is to be kept down permanently, as in pastures, the acid phosphate should be largely replaced by bone meal or basic slag. The fertilizer for permanent grasses may be similar to the following: Nitrate of soda, 100 to 150 pounds per acre; basic slag, 250 to 400 pounds, or bone meal 250 to 300 pounds per acre; muriate of potash, 40 to 100 pounds. These quantities of fertilizer may seem rather large,



Modern Way of Applying Stable Manure. One Handling from the Gutter to the Carrier is all that is Necessary

land, has been fully demonstrated. Experiment stations throughout the country have shown that it is possible to almost double the yield of hay, through top-dressing with manure or commercial fertilizers.

THE KIND OF MEADOW TO TOP-DRESS.

A poor stand of grass, or a meadow of long standing, is not likely to give maximum results from top-dressing. The former will contain many weeds, while the latter may be so sod-bound as to prevent proper development. The best results may be expected from grass land of the previous year's seeding, or a sod of two year's standing. In general, top-dressing the land the first year is the better practice, since the plants are invigorated and a more perfect stand is obtained in this way. Grass which is sown on especially prepared land in the late summer and top-dressed the following spring, will give a large yield of hay free from weeds. The increased growth of the grass, due to top-dressing, tends to crowd out the weeds much more rapidly than one should imagine. In general, it will be more profitable to top-dress a good sod of recent seeding rather than try to renovate poor stands of grass.

WHAT FERTILIZERS TO USE.

The true grasses, timothy, red top and blue grass, respond generously to applications of nitrogen in a

ing if not too coarse. In general, it is better practice to apply most of the manure to the grass land instead of on the sod for corn. By this method the hay yield will be largely increased, while the following corn crop will be almost as satisfactory as if the manure had immediately preceded the corn. A light dressing of manure, 4 to 6 tons, will show marked results on the hay crop. It is important that the manure be rather finely divided and distributed evenly. It is fast becoming the practice of farmers in certain sections to use the stable manure on the grass lands rather than on the seed land for corn. For example, the grass which is to be cut for hay next July is top-dressed with manure during this fall and winter, or early spring. After the hay is removed this land goes into corn for the following year.

THE QUANTITY OF FERTILIZERS TO APPLY.

Where the hay crop is promptly rotated with grain, a very liberal application of fertilizers may be made, as the minerals, phosphoric acid and potash, are not lost by leaching. The more humid climate of the coastal states makes conditions which will bring excellent results from top-dressing. For timothy or mixed grasses where timothy predominates, the following mixture is suggested. Nitrate of soda, 100 to 150 pounds per acre; acid phosphate, 50 to 100 pounds; and when available, muriate of potash, 25 to 50

but the fact is that our grasses will respond to these quantities very quickly provided the conditions are made right. In England and other foreign countries where large crops of hay are grown, the application is often double, and sometimes more, of this amount.

TIME OF APPLICATION.

Fertilizers containing nitrogen may be applied as soon as the weather becomes settled and the grass begins to grow. Too early application of nitrogen is likely to result in the loss of the soluble nitrates by leaching by frequent and heavy rains. The mistake is often made in top-dressing of applying the material too early in the season. Care should be taken to apply the fertilizers when the grass is dry. Stable manure may be applied any time in the winter or early spring when the ground is sufficiently firm to bear a load.

METHOD OF APPLYING FERTILIZERS.

The ordinary disk wheat drill with a fertilizer attachment is a very satisfactory machine for top-dressing grass land where a small quantity per acre is applied and where the acreage is small. For a heavier rate of application or large acreage, the fertilizer and lime distributor may be used. If the wheat drill is set just so as to allow the drilling apparatus

(Concluded on page 421)

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NOVEMBER 15, 1916

Thanksgiving

THE seasons have again rolled around to the time when we as a people are urged to consider our blessings and give thanks to a merciful Providence for the benefits we have received throughout the year. Not that we as individuals should confine our thanksgiving to one day out of the three hundred and sixty-five, but that our forefathers wisely conceived the idea that on one day in the year the entire people of this nation should give thanks in unison for national as well as individual blessings.

In our entire national history there has never been a time when we have had more reason for thanksgiving than today. With over half the peoples of the world torn by conflict and bereaved by a loss of life and property unprecedented in modern history the American people may well forget their petty troubles and bickerings and give universal thanks that they are enjoying comparative peace. We are apt to complain of the business complications and the increasing cost of living entailed by the great European struggles, but these things sink into insignificance when compared with the sorrows of the real sufferers of the war.

We American farmers have particular cause for thanksgiving at the close of this year's harvest, because of crops which, especially in the East, have averaged wonderfully well and which are bringing us a liberal remuneration that will help us out of many difficulties and open up for many of us an agricultural future which we have never before enjoyed.

Let us make November 30th a real Thanksgiving Day—a day for the expression of our gratitude that we as a nation have been spared the anguish that enshrouds the major portion of the world and that we have been blessed in many ways as never before in our history, and let us not forget that gratitude will be best shown by our willingness to mitigate in so far as in us lies the sufferings of those peoples less fortunate than ourselves.

Better Corn and More of it

DURING the past few years the idea of local, state and national corn shows has been rapidly developed. There is no crop on the farm which so readily responds to proper seed selection as does corn, so that the results of this work are quickly seen. While it has been true, in some cases, that men who have won prizes at the local show have not always had the largest crop of corn in their vicinity, they nevertheless have learned the lesson of proper seed selection. They deserve credit for having had enough interest in the matter to enter their corn in competition and have undoubtedly profited by it as well as their neighbor who secretly follows their example.

On another page of this issue Prof. A. E. Grantham, in his article, "Co-operative Corn Testing," makes the statement regarding the work in New Jersey, that

"in most of these tests the corn showed the lack of attention in selecting seed ears." When such a small detail as this will make an appreciable difference in yield, why shouldn't we always take care in selecting the seed?

If there is no organized effort in your community for a seed corn exhibit this year, wouldn't this be a good time to start one? In many cases the local Grange has taken hold of this movement and developed it into a county affair, held each year at the county seat. Farmers' clubs, agricultural societies, and in some cases banks, have all taken interest in the work and conducted successful exhibits. It is not necessary to provide expensive premiums, the only essentials for success being a few enthusiastic corn growers and a competent judge to show and explain why some of the corn is better than the rest. The county agents or demonstrators have been a great help in conducting this work.

If you live in a neighborhood where this idea has been developed, make plans now not only to exhibit at the local show, but also send your entries to your county and state shows where they will come in competition with other good corn and where winning a ribbon means something.

Progress in the "More Sheep" Movement

ONE of the largest live stock movements ever contemplated has been started in the formation of an "Ovine Alliance." Everywhere, of late, is heard the cry, "more sheep." We have already referred to the work undertaken by the Philadelphia Wool and Textile Association along this line, but this new plan, which is fostered by the American Sheep Breeder, has a broader scope. The idea is to get together the following interests: National, state and county sheep breeders' and wool growers' associations; flock registry associations; sheep breeders; sheep feeders; sheep shearers; dip makers and shearing machine manufacturers and supply houses; sheep and live stock sanitary boards; sheep commission firms and sheep salesmen; stock yards companies; feed yards; live stock exchanges; packers; retail butchers; railroads; wool dealers; wool manufacturers; clothing manufacturers; retail clothiers; bankers, agricultural colleges; county agents; chambers of commerce; live stock papers; hotels.

Although the sheep industry represents a capital of half a billion dollars, it is said to be the most hopelessly unorganized one in America. How to place it on a safe foundation is the problem to be solved. Woolen clothing and mutton for our hundred million people cannot be secured if the sheep industry keeps on going backward as it has the past few years.

It is planned to have a meeting in Chicago during the International Live Stock Exposition, of all the sheep interests, and select at that time men who will be at the head of an organization to boost the sheep industry in the United States. The movement is a big one and therefore will be hard to handle. It has our best wishes for success.

The Three M's

THE questions of manual labor, marketing and manure are three of the greatest problems to the man on the farm. So far no better way of solving all three of them has been found than by keeping live stock, especially a good producing dairy herd. By providing work the year round and comfortable accommodations more efficient help is secured than can be obtained by the farmer who only needs extra help at the same time all his neighbors do, and he has to either pay a premium to get it or else take what some one else does not want. The time has come when each farm must be more of a factory—selling less crops and more meat, milk, butter and eggs. A ton of butter is said to carry away from the farm about six cents worth of fertility, while selling the feed which is required to produce the ton of butter carries away several hundred dollars. The agricultural prosperity of some of the European nations has been due to their grasp and utilization of this fact.

While the dairyman in the past has not always received all that he should for his product, he has always had a ready market and a steady income. He has never met with a "glutted market" or crop failure. Cases are numerous where producers are receiving a special price for their goods and it only rests with the man as to whether he will supply a superior article at an advanced price or be satisfied with what the average are receiving. Dairy products today enter the market in so many forms that it is no excuse to haul milk away from the farm just because it has

been done that way for a long time. The market which live stock furnishes for the raw products of the farm is often underestimated. It is said that there are twenty-one million cows at work supplying the dairy demands of the people of the United States. These cows eat, according to Dean Eugene Davenport, of the Illinois College of Agriculture, two hundred thousand tons of feed every twenty-four hours. This means that they consume, in a year, feed approximately equal to their own value; more than equal to that of the wheat crop, and but slightly less than that of all the hay and forage produced in the United States.

Several experiment stations have demonstrated that by crop rotation alone soil fertility cannot be built up. Keeping live stock presents the easiest way of returning to the soil the elements which it needs to keep on producing without getting poorer each year. The great worth of barnyard manure is everywhere recognized. In the past a great deal of its value has been lost because of improper handling. Now with the modern equipment of track carriers, manure spreaders and covered sheds it is returned to the soil with far less effort and is more valuable than formerly.

It is because of these facts that we are continually increasing our attention to the live stock and dairy interests of our readers. We are of the opinion that when there is a realization of the benefits to be derived from this kind of farming the agricultural problems of this section will to a large extent be solved.

Working the "Side Lines"

IN nearly all lines of industry there exist certain "side lines" and "by-products," the careful watching and utilization of which yields a very considerable item in the profit showing for the year. That farming is one of those industries in which it pays to watch the by-products and side lines has been proved in many individual cases. We believe that it is one of the functions of the farm paper to point out these individual instances as suggestions for the many farmers who may have overlooked their opportunities. That many of our readers are already alive to the side-line idea was proved by the responses which met our proposition of this subject of "side lines" and "hobbies" as the topic for the Experience Pool in our issue of September 15th; we hope many were benefited by the experiences of their fellows as expressed in the contributions to this Pool.

It has come to our notice that many of the farmers in our territory are deriving a very considerable profit during the winter months by the employment of a small amount of capital and a reasonable amount of leisure time in trapping the fur bearing animals which abound along the streams and in the woods and mountainous districts throughout this section, and with the increasing demand for furs and the corresponding increase in prices offered the trapper, it has seemed to us that we could be of real service to our readers in telling them something regarding the best methods of trapping and preparing furs for market. It has therefore been our pleasure to secure a series of articles by an expert in trapping, the first of which, "Fur Trapping for Farmers," we published on Page 388 of our issue of October 15th; the second article of this series, "Preparing Furs for Market," appears in this issue. We commend these articles to the thoughtful consideration of our readers, with the suggestion that they carefully investigate their own neighborhoods to see whether there are fur bearing animals therein to be trapped and, finding that there are, that they set out in earnest to help meet the heavy demands of the fur market, with profit to themselves. Many of us have been prone to consider trapping as an amusement for our boys; at the present price of furs it may well become a serious business for both our farmer boys and men.

THERE have been many plans advocated to prevent the yearly slaughter of calves for veal and thereby increase the beef or dairy herds. State Food Commissioner Matthews, of Illinois, now comes forward with the statement that he has enough funds to warrant the purchase of 500 calves at prices a trifle in advance of those the farmer would be able to get from the butcher, and can give them expert care until six months of age. As the object of the plan is to build up the dairy industry of the state the calves will be sold at cost when six months of age to people who agree to raise them. If successful this movement ought to result in a great deal of good and we will watch its development with interest.

Producing Winter Eggs

By D. T. HENDRICKSON

Every farmer-poultryman before the advent of real cold weather should give his chicken houses a thorough cleaning. The houses will then be ready for the permanent occupancy of the laying hens during the long winter months. Begin by removing all the movable fixtures, such as nests, water pans and food, shell and grit hoppers, emptying them and thoroughly scrubbing them, after which they should be disinfected with a 5 per cent. solution of one of the coal tar dips. These fixtures should be allowed to remain out in the sun all day. Remove all the straw and litter from the houses and sweep the walls, ceiling and floor. Then apply a good coat of white-wash, made of 5 quarts of cream of lime (fresh slaked stone lime), 1 quart of kerosene to kill the red mites, and 1 pint of coal tar dip to kill the disease germs. Allow it to dry and then put the fixtures back. Refill the nests with dry, clean litter, refill the hoppers and put about 8 inches of dry, clean straw over the floor. The birds will appreciate an odorless, clean and light house, and will fill the winter egg basket to show their gratitude. A clean, sanitary poultry house means a healthy flock. A congenial environment means a contented, happy, singing hen, which is necessary to production.

Not only must the winter quarters be kept perfectly clean, but they must be spacious. It is the nature of poultry to roam and wander. During the winter when the birds are kept in confinement their natural instinct to ramble and forage is suppressed. This cutting off of their principal habit is liable to have a detrimental effect upon them. For this reason prevent crowding. Make the coops as spacious as possible. The structures that have a scratching shed attached, permitting the birds to wander from one shed to another, satisfies their desire to roam and reduces the ill effect of confinement. Contentment among fowls is an essential of great importance and ample space is conducive to this necessity. If the floor space does not give 5 or 6 square feet for each member of the flock, then the flocks should be cut down or new houses built for the surplus. Crowding will keep the hens from laying. There are few days during the winter that the birds can use the runs and practically all the remaining months of cold weather will find the flocks confined to their buildings. Those who are now crowding their poultry and do not wish to dispose of any of the birds should construct a scratching shed adjacent to the present pens. This need not be pretentious nor even closed in front, other than with a canvas or muslin curtain, but it should be large enough to afford the hens the needed room.

I have found that clear, warm, comfortable, spacious quarters for the laying hens are of no avail, if the fowl is not in prime condition and is not properly fed. In the winter nature rebels against production, and to get the hens to lay conditions must be made the same as they are in June. In order to be a good layer a hen must be hatched out in March or April and mated with cockerels of the year before. If a hen is not old enough to begin laying until cold weather sets in, she will not lay until summer. Many of our hens began laying in November and during some of the coldest weather 75 and 80 per cent. records were made. A few days even 100 per cent. was reached by some of the pens. It takes 24 to 36 hours for an egg to form, and all the eggs ever to be laid by a hen are in her when she leaves the shell. It is up to the man or woman to make con-

ditions right so that all of them will be laid. The hen is a machine for the transformation of food and waste products into a highly concentrated human food. A good hen will, in a year, consume twelve times her weight in food. Winter egg production depends upon



Thanksgiving Turkeys are Scarce this Year, and a Bird Like This Brings a Handsome Profit to His Producer

making the winter ration as near as possible like the spring food furnished by nature, when egg production reaches its height. Some of the essentials for winter eggs are clean, pure fresh water; succulent food, like cabbage or mangel wurzels; a sparing amount of salt, and beef scraps, 5 to 10 per cent. of bone in the mash. The great value of sour skim

must contain succulence or green food; fifth, it must be economical, not cheap; sixth, it should be easily mixed and stored; seventh, it must be regularly fed; eighth, special feeds are important, such as grit, shell and charcoal.

I know of no better feed for the laying hens than the ration recommended by the poultry experts of the New Jersey

A Splendid New Serial Story

will begin in the next (December 1st) issue of *The Practical Farmer*—a story brim full of happiness, humor and human nature.

The characters in fiction that really live and add to the permanent store of the world's joy are few. To create one such character is not only a fine achievement, but a great service. There seems nothing of the fictitious or the imaginary about Persis Dale in

"Other People's Business"

by Harriet Lummis Smith, a story of country life, which we will have the pleasure of presenting to our readers. She is as much alive as one's next door neighbor and far better known. She is the trouble mender of the village, a deputy to Providence in the kindly over-ruling of the tangled lives of her friends. She is the angel who does not fear to rush in—a very womanly angel, not so bright and good as to be above curiosity and an interest in other folks affairs. She is all compounded of humor, kindness, sympathy and shrewd sense. She is rock bottom human nature—food for love and laughter—and she makes the tired reader rejoice!

It is with real pleasure that we will offer this charming new serial story to our readers, with the earnest wish that they may get as much enjoyment and as many chuckles out of its reading as we have.

Watch for the First Chapter in the December 1st Issue

State Experiment Station. This is based on economy and efficiency for egg production and is to be fed as a dry mash, a morning scratching ration, and a night ration. The formulae are as follows: Dry mash—Wheat bran, 200 lbs.; wheat middlings, 200 lbs.; ground oats, 100 lbs.; corn meal, 100 lbs.; meat scraps, 200 lbs.; alfalfa, 100 lbs.; total, 1000 lbs. Scratching ration, thrown in litter—Wheat, 100 lbs.; oats, 100 lbs. Not enough of this is fed to glut the birds.

Night ration—Cracked corn, 200 lbs.; wheat, 100 lbs.; oats, 100 lbs.; buck-wheat, 100 lbs.

Poultry feeding is a problem, and one that requires much time, forethought and experimenting to reduce it to a science. Today, on account of the high price of feed, the poultryman is not willing to compound suitable rations for his flock, then the sooner he can dispose of them the better it will be for him financially. One must keep account of every expenditure to learn just how he stands if he wishes to economically improve upon his present methods. This is just as important when the establishment is kept to supply the household as when it is run on a commercial scale.

The demand for eggs at this season of the year always greatly exceeds the supply, and that, of course, enhances the value. It is an encouraging sign that many farmers are engaging more and more in the poultry business. At our Fruit Vale Farm, near Middletown, a flock of about 400 White Leghorns and Wyandotte fowls laid 52,000 eggs from Jan. 1 to Nov. 1, which sold for over \$1,100. Deducting the cost of feed, which also kept 4 horses and 2 cows, the net profit was \$540, or enough to more than run the house. In other words, these hens fed everything on Fruit Vale Farm, including the family, while the products of the farm are all clear profit. Besides those who make poultry raising a business, about every other farmer in this county keeps from 50 to 200 hens and by trading off the eggs at his grocer's, is able to supply the table without any actual outlay of cash. Another source of income from poultry is found in the sale of neatly dressed chickens, which command the highest market prices at all times. Another, and sometimes greatly overlooked source of revenue from poultry is the high fertilizer value of the droppings. These are rich in ammonia, and when mixed with land plaster, are fine for producing crops of sweet corn and garden vegetables. New Jersey.

Concrete Post Failures

Failures in the making of concrete fence posts are frequently due to causes that may be easily remedied. Professor F. W. Ives, of the Agricultural College, Ohio State University, suggests the following:

Most failures come from using dirty sand, dirty stone or lumpy cement.

Concrete posts must be reinforced to furnish strength necessary to avoid breakage by pull of fence or impact of animals or machinery. Three or four No. 3 wires will give the proper reinforcement.

Rusty reinforcement should never be used.

Concrete maintained at a temperature of 60 to 70 degrees will have practically double the strength at the end of a week than the same material kept at a temperature of 32 to 40 degrees.

Posts should not be used until they are three or four weeks old. Even a longer time is desirable.

A good size for a fence post is 4 inches square at the top, 4x6 inches at the butt, and 7 feet long.

HORTICULTURE

Edited by C. A. McCUE

Shall the Apple Orchard be Fertilized?

During the last twelve years there has been a great deal of interest in the use of commercial fertilizers for the apple orchard. Many of the experiment stations started long-time orchard experiments to determine whether or not the use of mineral fertilizers upon apple trees is advisable. The results from a few of these experiments are now available. Yet strange to say, there still exists a controversy upon the subject. The New York Station, after ten years of annual applications of fertilizers, reported no benefits, while the Pennsylvania Station reported marked results from some orchards in which they had experimented. A casual survey of results from the numerous experiments seems to leave the value of commercial fertilizers unsettled; there appears to be as much argument against their use as there is for them. These seemingly irreconcilable results can, however, upon careful study be explained. All experiments so far reported have merely proved that some orchards need the application of commercial plant food and some do not. If one particular orchard gives good results from commercial fertilizers it is no sign that another orchard needs help in this way. A rational study of fertilizing apple orchards must go deeper than a few tests of commercial fertilizers.

One of the first questions that we must settle is, will an apple crop exhaust the plant food in a soil? The apple crop is unlike most farm crops, in that it cannot be rotated from one field to another. The drain upon soil food is rather constant and with a tendency to increase each year. With other crops, such as wheat, no good farmer would think of growing them continuously upon a piece of land year after year.

Prof. J. P. Stewart, of Pennsylvania State College, has gathered together all the available data upon the annual drain of plant food from the soil by apples and compared it with wheat. The figures which he submits are compiled from chemical analyses of wheat crop and apple crop. They indicate what the plants have used in growing a crop, and in no way indicate what the plants might have used had more or less plant food been available. It is no longer believed that the chemical analysis of a given crop will indicate the proper fertilizer requirements of that crop. Crop fertilization is more complicated than that. A chemical analysis merely shows what a given crop did use, not what it might have used or what it might have gotten along without.

Prof Stewart's figures show that a crop of wheat of 25 bushels per acre uses annually 43.7 pounds of nitrogen, 15.8 pounds of phosphoric acid, 26.8 pounds of potash and 8 pounds of lime. A crop of 700 pounds of apples per tree, and 35 trees to the acre, uses annually 53 pounds of nitrogen, 15 1/4 pounds of phosphoric acid, 64 pounds of potash and 61 1/2 pounds of lime. In the apple crop this amount of plant food is used to produce the fruit, the leaves and the annual wood growth. In the case of the leaves, however, most of the plant food is returned to soil. If all the leaves could be retained upon the soil it probably would result in the upper few inches of the orchard soil becoming richer rather than poorer, as undoubtedly a great deal of the food a growing apple tree uses comes from a depth greater than the three or four inches of surface soil.

If all the leaves were to be returned to the soil there would be returned annually per acre about 25 1/2 pounds of nitrogen, 5 1/4 pounds of phosphoric acid, 16 pounds of potash and 29 1/2 pounds of lime. Taking these amounts from the amount used annually we would have left 27 1/2 pounds of nitrogen, 10 pounds of phosphoric acid, 48 pounds of potash and 32 pounds of lime. These amounts would be entirely lost from the total amount of available food in the soil, as they would be removed in fruit and wood growth. Here then would appear to be a safe and sane basis to fertilize an apple orchard, for if we return each year what the crop takes away our soil would not be exhausted by the crop. Yet the grower who followed this practice might be wasting his money and performing unnecessary labor. There might, for instance, be already in his soil available nitrogen for 50 crops, available phosphoric for 60 crops, available potash for 40 crops, and available lime for a hundred crops. If this was true he would be foolish to keep on applying all these elements year after year and until some one of them became exhausted he would see no benefits. No striking results will be observed from the application of any of the plant food elements until the available amount of that element in the soil has fallen below the needs for the crop. If this is so it seems a much more rational procedure to get along without commercial fertilizer until the trees show the lack of one or more plant food elements and then apply them. The trouble, however, in such a method of fertilizing lies in the fact that our scientists and experimental stations have not as yet given us reliable symptoms for an apple tree that is suffering from a lack of potash, or phosphoric acid, or nitrogen, or lime. Until this is done all orchard fertilization must be more or less in the dark. We should know how an apple tree behaves when it is suffering from a lack of potash, or nitrogen, or any of the plant food elements. We experimenters have been working on the wrong end of the fence; we have been studying how trees behave that are given an abundance of any plant food, what we need

to study is how trees behave when they do not have enough of a given plant food. When we have determined definitely, if we can, the starvation symptoms of lack of any food, then we will have a rational basis to stand upon in prescribing food treatment for a given orchard.

In many cases we may get starvation symptoms, when in reality there is no lack of plant food in the soil. Weather conditions or over cultural practice may fail to make the plant food available. Severe drought may give starvation symptoms, because all plant food must be in solution before the trees can use it. Hence the maintenance of a proper moisture content in the soil is one of the first principles of good orcharding. There must always be plenty of water in the soil, yet the soil should not be wet. A high humus content in orchard soils is one of the easiest ways to regulate water content. Then again, our soils should be so handled that the water content is neither too high nor too low. In some cases all this can be regulated by cultivation, in other cases by a mulch system, and in still others by a cropping system. There is no one system of orchard soil management that will fit all cases. The sooner horticulturists recognize this and stop trying to make general treatments, the sooner we will have orchard management upon a sound basis.

I think I can say, without danger of being contradicted, that the one most important element in successful apple growing is proper regulation of the water supply for the trees.

Starvation symptoms may also be caused by faulty systems of soil management, the soil particles may be too coarse, and the plant food be locked up when proper tillage might release it for use. Before resorting to commercial fertilizers the good apple grower should be sure that he is making the most of the plant food that he has in his soil. If he feels that he has done this, or finds that it is cheaper to buy plant food than it is to make it available, then he is justified in applying commercial fertilizers. Nitrogen is the element that is most used in producing fruit crops, and the one that is easiest lost by faulty soil management. Yet fortunately it is one element that we can, in large measure, replace by growing leguminous cover

crops in the orchard. Nitrogen is most likely to become the limiting factor sooner than any other.

If our apple orchards have had good management and show a good color, good annual growth and produce good crops, it is not likely that the application of commercial fertilizers will increase the yield appreciably. If, on the other hand, our trees are not producing properly and are not growing well and the foliage is not a deep green, the orchard may or may not need commercial plant food. The man whose orchard is in this condition should carefully study his method of management, such as tillage, cover cropping, pruning, spraying, etc., or may be the plant food is present but not available because of faulty management. If he feels, or is sure, that his cultural management is all right, then he had best ask the trees what plant food is needed. This can only be done by experiment. The following method of procedure is suggested: Lay off six square blocks of 25 trees each in the orchard, as shown in the diagram.

1	2	3
NK	nothing	NP
4	5	6
KP	NKP	nothing

Since apple tree roots spread much farther than the tops, there is likely to be cross feeding from one row to another, hence in making observations they should be done upon the 9 center trees in each block.

As a trial fertilizer use 30 pounds of nitrogen, 50 pounds of phosphoric acid and 30 pounds of potash per acre. (One must complete the area in one of the square blocks to find out how much to apply. For instance, if the trees were 20 feet apart the square would be approximately one-quarter acre). Thirty pounds of nitrogen can be approximately obtained in 200 pounds of nitrate of soda, 50 pounds of phosphoric acid in 350 pounds of acid phosphate, and 30 pounds of potash in 60 pounds of muriate of potash.

On plat 1 apply nitrogen and potash.

On plat 3 apply nitrogen and phosphoric acid.

On plat 4 apply potash and phosphoric acid.

On plat 5 apply all three.

On plats 2 and 6 make no applications, but use the plats as checks to see if any of the treatments improve conditions materially.

One can not expect immediate results the same year, except perhaps in the case of nitrogen. Increased yields will usually come the second and third years. Make the applications at least two years, and, better still, for three years before trying to draw any conclusive results.

If plat 1 gives excellent results it indicates that phosphoric acid is not needed.

If plat 3 gives excellent results it indicates that potash is not wanted.

If plat 4 gives excellent results it indicates that nitrogen is not wanted.

If plat 1 does not give good results it may indicate that phosphoric acid is wanted.

If plat 3 does not give good results it may indicate that potash is wanted.

If plat 4 does not give good results it may indicate that nitrogen is wanted.

If neither plats 1, 3 and 4 give good results it indicates that nitrogen, potash and phosphoric acid are all wanted.

If 1 and 4 give equally good results it indicates that potash is wanted.

If 1 and 3 give equally good results it indicates that nitrogen is wanted.

If 3 and 4 give equally good results it indicates that phosphoric acid is wanted.

If 5 gives better results than all others it indicates that nitrogen, potash and phosphoric acid are all wanted.

If none of the plats show any improvement over plats 2 and 6 it indicates that the orchard is not in need of either potash, phosphoric acid or nitrogen, but that the trouble lies elsewhere. In some cases lime is needed. To determine if it is needed, lime might be applied to plat 2 at the rate of 500 pounds of hydrated lime per acre or additional plats, using potash and lime and phosphoric acid and lime, could be laid out.

At our present state of knowledge an experiment such as indicated above, is the surest guide to rational orchard fertilization.

Bee Keeping for New Jersey Farmers

The need for and the opportunities in honey production are so large in New Jersey that Rutgers College has decided to offer a short course in bee husbandry. It is believed that nine-tenths of the nectar annually secreted is lost through lack of properly managed bees to gather it. It is known that tons of honey are annually brought into New Jersey to supply local needs and that practically no effort is being made to increase the use of honey. In view of these facts the splendid opportunity for profitable honey production in the state is apparent.

Many have started producing honey without training and with such a small number of colonies that success was impossible. It is said that the largest honey producer in New Jersey has but 250 to 300 colonies of bees, representing an investment of not over \$3000, and the net proceeds average \$1500 annually. One active man should be able to do all the work in handling 300 to 500 colonies with the help of unskilled labor for two or three weeks during extracting time. That this splendid resource of the state may be developed; Rutgers College will offer this short course, which is planned to give the student a practical knowledge of profitable bee husbandry, provided as many as four per-

sons apply for the course. Any one after completing the course and after having spent one season in a commercial apary will be fitted to profitably conduct a honey producing business.

Full particulars can be had by addressing Prof. F. C. Minkler, Director Short Courses in Agriculture, New Brunswick, New Jersey.

Queries Answered

Buckwheat in a Peach Orchard.—J. G. E., Delaware, writes: "Would buckwheat be harmful to a peach orchard two or three years old? I would like it for chickens to eat after ripening."

Whether or not buckwheat will harm your orchard will depend greatly upon the time that it is sown. Buckwheat makes a heavy draft upon soil moisture and should not be allowed to compete with the trees at the time that they are making their greatest growth; that is, during the months of April, May and June. If the season was at all dry during July, as it is apt to be in your vicinity, I would hesitate to sow buckwheat before the first of August. If the season is wet it might be sown as early as July 20th. I would classify buckwheat as a very poor cover crop for peaches in your locality. If your peach orchard is in good condition, has a dark green foliage through the season and is making a good growth, you could try out the buckwheat, sowing the latter part of July, and I am inclined to think that it will form seed before frost. If your peach trees are not in a good, healthy condition, I would advise against the use of buckwheat, although it might possibly be combined with an application of 100 pounds of nitrate of soda per acre, sown broadcast and harrowed in about the 20th of April to the first of May.

Growing Apricots.—J. G. E., Delaware, writes: "Do you think apricots are profitable for market? If so, how do they compare with peaches? Is the tree as large?"

Apricots will not prove a profitable investment in Delaware. The danger from frost is too great. The apricot comes into bloom before the peach and its blossoms are very apt to be killed by late spring frosts. I certainly would advise against your trying to grow them for commercial purposes. California and the Southwest are about the only places in the United States where apricots will prove a safe investment. At the Delaware Experiment Station there are about 25 apricot trees that were planted in 1908, and only once, in 1915, have they produced any fruit, and then only in small quantity. The trees grow about as large as a peach tree, and in appearance they resemble more some of the Japanese plum varieties than they do peaches. For eating out of hand most apricots are inferior to peaches, and canned they are rather insipid. As a dried product they possess much merit. The Moorpark is the only variety worth growing.

Insecticides Purer

Marked improvement in the quality of insecticides and fungicides is shown by the annual report of the Insecticide and Fungicide Board for the fiscal year ended June 10, 1916. In 1915 only 8 per cent. of the samples of lead arsenate taken were in violation of the act, whereas in 1911-12 60 per cent. violated the law.

While these results are probably due to the effect of deterrent prosecutions, they are due in even greater measure to the assistance the department's scientists have accorded to manufacturers in making their products of standard strength and to the growing practice on the part of manufacturers of adapting themselves to improved methods and tests.

Scheduled Farmers' Meetings

"Maryland Week," Baltimore, Md., November 14-18.
National Grange Meeting, Washington, D. C., Nov. 15-24.
International Live Stock Show, Chicago, Ill., Dec. 2-9.
New Jersey State Grange, annual meeting, Atlantic City, Dec. 5-7.
Virginia State Horticultural Society, 21st annual meeting, Roanoke, Va., Dec. 5-7.
Delaware State Grange, annual meeting, Dover, Del., Dec. 12-14.
Pennsylvania State Grange, annual meeting, Philadelphia, Pa., Dec. 12-14.
New Jersey State Horticultural Society, annual meeting, Burlington, N. J., Dec. 12-14.

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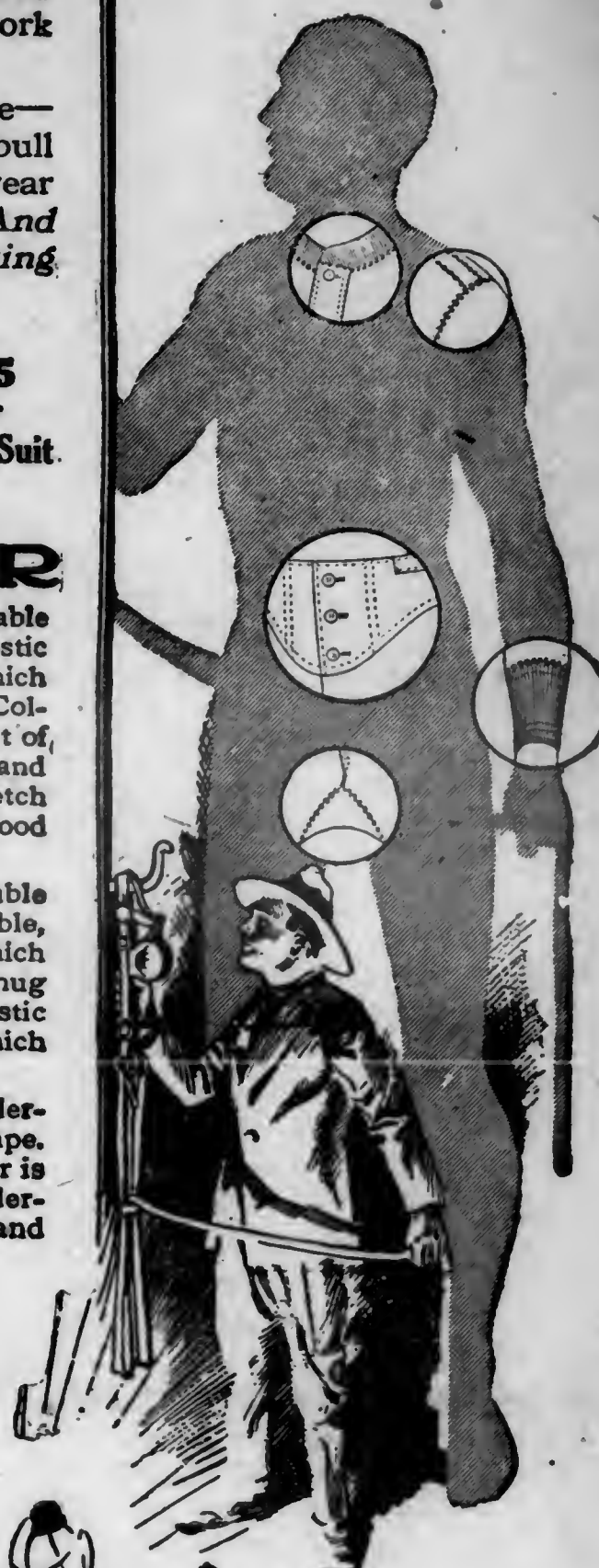
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THE GARDEN

Edited by W. F. MASSEY

All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

The Early Cabbage Crop

From Baltimore southward November is the time for setting the plants of early cabbages. We run furrows three feet apart and either fill them with well rotted manure or apply 1000 to 1500 pounds per acre of a good high grade fertilizer. Then bed on these furrows with a furrow from each side running east and west. Open a shallow furrow down the middle of the ridge and set the plants 15 inches apart and deep enough to cover the stems. Then when the soil is levelled in spring they will come all right on the surface.

In colder sections it is better to set the plants in a cold frame 2 or 3 inches apart, and try to keep them as near dormant as possible during the winter by exposing them to the air in all weather that is sunny and not colder than 25 to 30. These temperatures will do no harm, but if kept too close the plants will get tender.

Northward it may really be better not to use the fall sown seed, but to sow in a well banked frame in early January and then get the plants in the best shape for setting in spring, and there will be but little difference in the usual earliness of the crops.

Growing Horse Radish

Several correspondents have asked about the cultivation of horse radish. Just now it is well to get the roots for planting in the spring and bury them in a convenient place so as to have them handy at planting time. The best variety is the Maliner Kren or Bohemian horse radish. The root cuttings can be had from any of the leading seedsmen. The cuttings are made cut straight across at top and sloping at the lower end, so that it is easy to distinguish between them in planting.

The time for planting is in the earliest spring, and the early cabbage plantation is one of the best places. Punch holes in the rows midway between the cabbage plants with a crow-bar and put the root cutting in perfectly straight. Then, after the cabbages are cut, the horse radishes are cultivated through the season. An application between the rows, of 150 pounds of nitrate of soda per acre will promote the rapid growth of the roots. The crop is dug in late fall and the roots trimmed, the side roots cut properly and buried in bundles for the winter, and the main roots put on the market. The roots are at their best at one season's growth, and will decrease in value if left longer. The main roots are sold by the ton usually.

Spinach

The spinach that was sown late for spring cutting will be greatly helped now by a heavy mulch of stable manure, not only as a winter protection, but for the promotion of a rapid growth in spring. Spinach that was sown early for fall cutting is now ready and should be cut before the outer edges of the leaves get frosted. The favorable weather here has made the fall spinach remarkably fine and we are cutting it rapidly.

Some sow another crop in early spring, but I have found that this spring-sown crop runs to seed just as soon as the late fall crop and here I depend for spring cutting on the crop sown early in October, which at present is just large enough to probably winter well. In cold

sections it may be wise to sow in spring. Formerly it was advised that the prickly seeded spinach was best for spring sowing, but I have never found this to make a good crop as compared with the smooth seeded Savoy-Leaf variety. This fall there is a great scarcity of spinach seed, and any one who intends to plant in spring had better get the seed at once. The seed usually sells for 20 cents a pound, but is now 75 cents. One seedsman told me that he had contracted last spring for 75,000 pounds of American grown seed and 50,000 pounds from Holland. He got less than one-fourth the American seed and so far has been unable to get any at all from Holland.

Onions

My sets of the Yellow Potato onion and the White Pearl planted in September are now growing finely. Now we will take the garden hand plow and throw a furrow to each side of the rows as a winter protection to be pulled away in the spring, as the bulbs form better on the surface.

The White Pearl onions are planted for early green onions, and here they are usually ready for bunching in March. Later the side offsets of the Potato onions are pulled for green onions and the main bulbs left to ripen. The Yellow Potato onion is quite hardy, and while the White onions may get hurt in a hard winter I have never had the Potato onions injured. In a colder climate the sets planted thickly in frames and later protected with the sashes will make green onions early and the frames can be cleaned out in time for tomato plants.

Frame Lettuce

My lettuce in the cold frames is growing rapidly and promises to head for Christmas or sooner. This fall crop of frame lettuce can be grown a good way north of here, for with the double glazed sashes the crop will be safe even if real hard winter should come before Christmas. In fact, with frames well banked on the outside and the double-glazed sashes on it, the outside temperature may get near zero without damage to the crop.

Outside lettuce from seed sown in August is now heading well and we hope to get it before any hard freezing has damaged it. In fact, we are now cutting, in early November, fairly well headed lettuce, and we seldom have weather to damage it seriously before the middle or last of the month.

I was down in North Carolina the first of this week and found everything green and flourishing, while here the tender stuff has been blackened by frost. Two or three hundred miles north or south make a wonderful difference in climate.

Chrysanthemums

Down here we bloom all the early varieties outdoors, and as I write they are still very showy. But in colder sections you can grow them outside until well budded and then take the plants up with a mass of soil and set in boxes or tubs, and they will bloom finely in the house. But for weeks here we have had flowers outside that compare well with those the florists grow under glass, and the hardy single flowers and button varieties are fine in vases. I grow these

from seed and get a great variety of single and double ones. Then those I do not care to keep I dig up and throw away. I have in this way gotten a collection of the Pompon sorts that are hardy anywhere, and which are as fine as any of this class sold by florists.

Winter Protection

Where it is necessary to lift the beets, carrots and parsnips the best way to keep them is to pack them upright in narrow trenches such as some use for celery, and cover with boards and straw. In the flower garden, if you have tender tea roses the best winter protection is a mound of sawdust around them. It does not matter if the entire tops above the sawdust are killed, for this class of roses bloom only on the young growth, and the cutting down will make them grow and bloom better.

In sections where zero temperature prevails in winter, the remontant roses had better be tied up in straw, for it is important to save the ripe wood of these, from which the blooming wood is produced.

Wintering Cabbages

There are a number of ways in which cabbages can be wintered after late heading. I turn them over with head to the north and bank the soil over them, leaving the top open but shaded from the winter sun. In a colder section I have run out furrows deeply and packed the plants, roots and all, closely in the furrow, then throw a furrow to them and pack in another row until I had a bed six feet wide. Over this bed I built a shelter of green pine boughs to keep the winter sun off, and they kept well. Some bury them upside down and cover entirely. I have never tried this. In cold climates where they are largely grown, frost-proof covered pits are the best place to pack them.

Celery

Where celery is grown in the Baltimore bed method we, of course, leave it where it grew, well covered with earth and straw or fresh leaves, but where grown in rows the plants must be lifted. The best way to keep them is to make trenches a spit wide and as deep as the plants are tall and pack them closely upright in these. Then make a cover of planks nailed V-shaped and cover these with straw, or pack in cellars made for the purpose. The green varieties of celery, blanched in earth, are far better than any of the so-called self-blanching varieties. The self-blanching sorts will do to sell, but for home use we want crisp, solid and brittle celery with a fine nutty flavor, and the self-blanching sorts seldom combine these qualities.

Keeping Onions

Remember that it is light and warmth that cause the onions to sprout. Kept in total darkness and at a temperature just above 32, or if occasionally lower, the onions will keep well, though some varieties are better keepers than others. I have kept the White Multiplier onions in a heap on a barn floor all winter. No onion will be seriously injured by slight freezing, but it is better to keep them just above the freezing point and to keep them dark.

Rake up the fallen leaves and use as a mulch for flowers and shrubs. Hardwood leaves, like oak and chestnut, contain more plant food than those from soft wooded trees. All dead stalks and other matter in the garden not used for mulching should be burned as soon as possible in order to kill weed seeds and disease germs.



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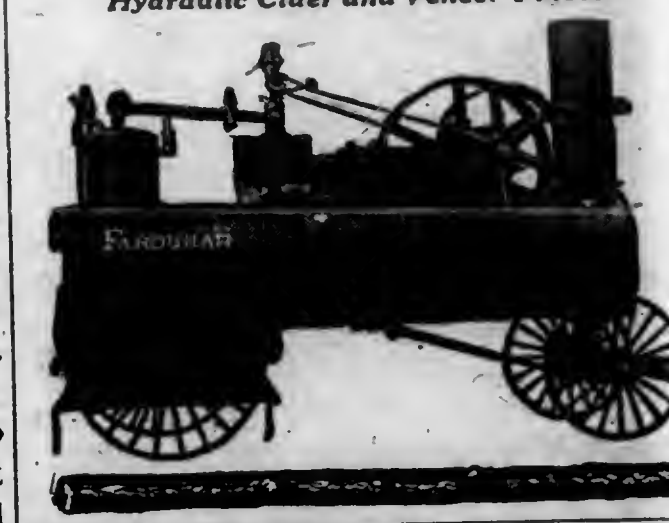
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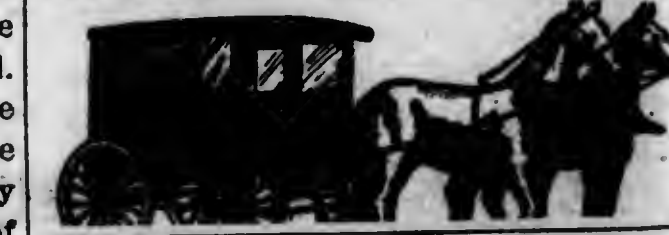
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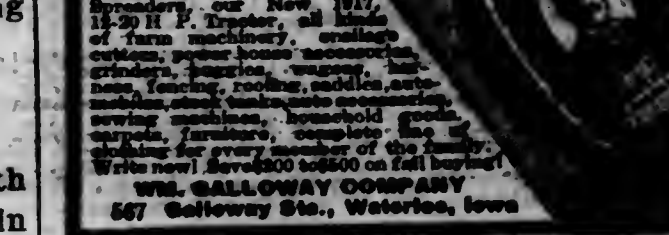


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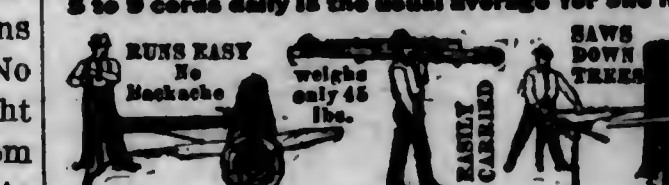
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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

Co-operative Testing of Varieties of Corn

During the past week the writer has had the opportunity of being on farms where a number of varieties or strains of corn have been grown side by side this season. The work was planned as follows: The county agent or farm demonstrator early in the spring secured a sample of seed from a number of farmers in the neighborhood. Then some farmer in the locality agreed to plant these various strains on his farm and carefully tend the crop during the season. Care was taken to select a field that was uniform with respect to the quality of the soil so that every variety would have the same chance. These tests have shown that within the same neighborhood there are strains of corn that vary as much as 50 per cent. in yield. In one case the best yield was 66 bushels per acre, while the lowest was 32 bushels. The difference in yield was due primarily to the strain or variety, as the soil, fertilization and tillage were the same for each. It was noticeable that the larger yielding strains did not have extra large ears, but that they were very uniform in size. The low yielding strains showed a much wider variation in the size of the individual ears, which in a large measure cut down the total weight. The better yielding sorts showed a greater uniformity in the type of ear as indicated by the depth of kernel, indentation and color. Those varieties or strains which lacked constancy of color, or, in other words, were badly mixed, were not the best producers. This supports our theory that there must be more or less constancy in type of ear in order to get the highest yield of grain. Out of a number of types of ear, all cannot carry the maximum quantity of grain; only a few are the best, hence this is the chief reason for giving attention to the selection of seed ears. Ears of a certain type will tend to reproduce that type. In most of these tests the corn showed the lack of attention in selecting seed ears. The depth of kernel was too shallow in most cases; much more grain per ear could be carried by selecting seed ears with a deeper kernel.

The educational features of neighborhood testing of corn are valuable. It gives to every farmer who has entered the test some idea of how his corn stands in respect to yield with those of his neighbors. As the different varieties are husked separately and placed in piles they are easily compared. The farmers of the entire neighborhood are invited to come at the time the corn is weighed. Generally the county agent or some one else familiar with corn discusses the good and bad features of each lot entered in the test. The growers themselves are often amazed at the difference in yield of the varieties. It shows to them that there is a difference in the performance or yield of sorts in the same neighborhood and sometimes this difference is sufficient to pay for the entire cost of production. Such work as this should be conducted in every locality. In the end it will result in a better knowledge of the type of ear to select for seed purposes, as well as what varieties will utilize the season to the best advantage. It was very clear in some of these tests, which were conducted in the state of New Jersey, that a

later maturing variety would be more satisfactory from the point of yield. The local sorts now grown do not take full advantage of the season at their command. This, however, is a point that has its limitations, as a long-season variety of corn must have fertile land and careful attention in order to mature. On the other hand, the earlier maturing sorts may do fairly well on poor land under favorable circumstances. All of these considerations may be brought out in a test or demonstration of this kind.

Does Deep Plowing Pay?

F. A. O'BRIEN.

I discovered accidentally in a rather peculiar way that the deep plowing recommended by the county agents and farm demonstrators of the United States Department of Agriculture was a practical proposition.

We have a red clay subsoil in this county. It is difficult for the roots of crops to penetrate it and equally difficult to drain it and make it store moisture during dry seasons.

I wasn't thinking of any of these things, however, when I decided to clear the stumps off a 2-acre plat and to use dynamite for the purpose. However, the first year that I farmed these 2 acres after blasting out the stumps, I discovered that everywhere a stump had been shot out, the crops were better over an area of about 7 or 8 feet. It was evident the dynamite had worked wonders in breaking up this red clay subsoil. It had enabled my crops to root deeply. Plenty of moisture was supplied through the growing season, while at the same time all surplus water was drained down through the soil below root depth.

In view of my observations, I cannot help being a believer in the theory that deep plowing pays; at any rate, on our red clay subsoils. Of course, it is obvious that a much deeper breakage can be obtained by blasting than is possible by any subsoiling implements that have been invented so far.

Virginia.

Queries Answered

Aliske Clover.—F. A. Delaware, writes: "Can one sow Aliske clover on wheat in March and get a good stand? Would this be a good crop to turn under for corn the next spring, or would it be better to turn the wheat stubble and seed?"

If your land is in good condition as to fertility you should get a stand of Aliske clover by seeding in wheat in the spring. This will make a fair sod by the next fall and may be used profitably for corn. I should prefer to use a mixture of Red and Aliske clover rather than the Aliske alone. If you fail to get a stand in wheat the stubble may be turned and then seeded. But in the latter case you probably will do better to sow Crimson clover unless the land is low and inclined to be wet. You will ordinarily have less trouble in securing a stand of Aliske clover than Red clover. The seeding is usually made as for Red clover.

Applying Limestone.—C. C. New Jersey, writes: "My farm lies in Morris Co., N. J., at an elevation of about 1200 feet; soil a clay loam. I could not plow for rye because of lack of rain, as the ground broke up in chunks. I propose to put corn on it next spring, following that with rye next October 1st to 15th. I have the ground limestone on hand that I intend to spread before sowing. Would you advise spreading it during the winter, before, of course, the land is plowed? I should put it on with a spreader."

It would be a good plan to apply at least half of the limestone during the fall and winter before the ground is plowed. The other half may be put on after the land is plowed in the spring. This practice I should advise especially if the present land is in sod; if in corn

stubble all the limestone may be applied this winter. It requires some time for limestone to act, and as the tendency is for lime to work downward, surface applications are satisfactory and results in a better distribution of labor.

New Jersey Agricultural Week

State Secretary of Agriculture Alva Agee is making plans to hold in Trenton during January what he has designated as "Agricultural Week." The annual meeting of the State Board is the third week in January, and at that time all the varied agricultural interests and organizations through the state will be invited to participate. The State Department will provide meeting halls, publicity and other arrangements for the convenience of the different societies. Among the organizations that are expected to meet simultaneously with the State Board are the County Farm Demonstrators, the Guernsey and Holstein Cattle Breeding Associations, the State Poultry Association and dependent bodies.

Pennsylvania Vegetable Show

The annual meeting and show of the Pennsylvania Vegetable Growers' Association will be held at Harrisburg, January 23, 24 and 25, 1917. The officers of this organization are: President, S. Herbert Starkey, Bustleton; Vice-President, W. H. Welschenck, New Castle; Secretary, J. R. Bechtel, State College; Treasurer, H. W. Pierce, Wilkes-Barre.

The program will consist of four sessions led by growers and specialists. It is probable that there will be one session on each of the following subjects: Green-

house Problems, Pests of Vegetable Crops and Latest Methods of Control, Economic Production, and Marketing.

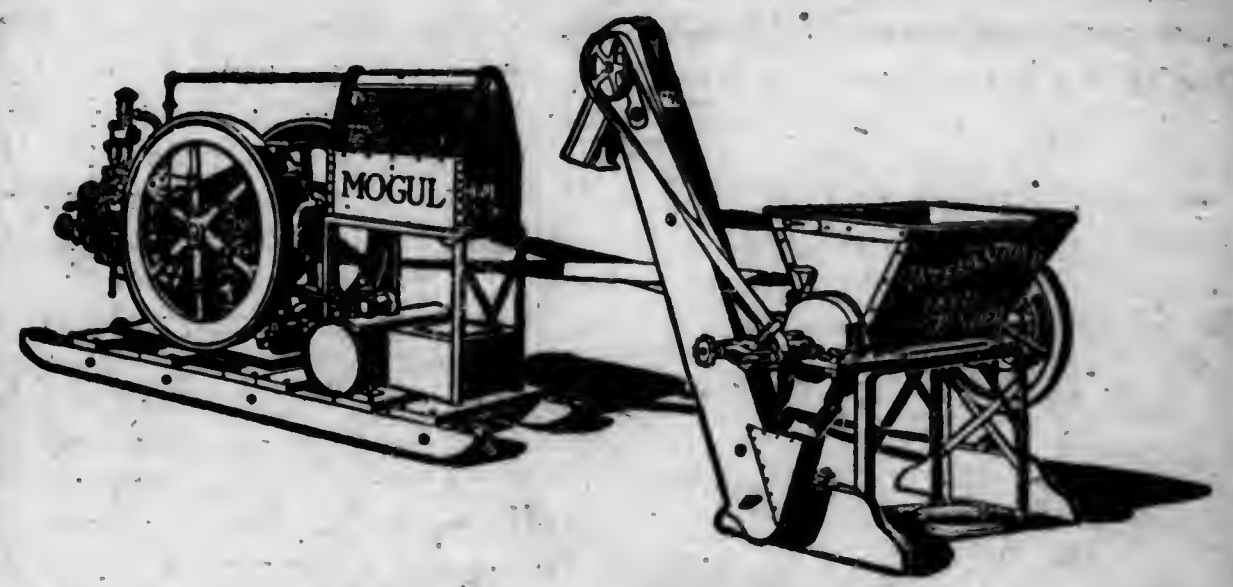
Plans have also been made for an exhibit of farm and greenhouse vegetables. Secretary Bechtel will be glad to send a premium list to any one asking for it. While the month of January is not ideal for an exhibit of this kind there is much that can be shown at that time by now storing choice vegetables. All products entered for competition must have been grown in Pennsylvania by the exhibitors. Non-members, as well as the members of the Association, are invited to show their vegetables. No charge will be made for exhibit space, nor will entry fees be charged. Valuable premiums will be offered for prize winners in the various classes.

Top-Dressing Grass Lands

(Concluded from page 415)

to come into gear only a light disking will result, and this will not injure the grass. Broadcasting by hand is another method, hardly so desirable on account of the labor and the difficulty of securing even distribution of the fertilizer. If nitrate of soda alone is used it should be finely screened and mixed with equal parts of dry earth or sand in order to drill evenly. Where acid phosphate is a part of the mixture no other filler will be required. Stable manure is most efficiently applied with a manure spreader.

The writer's observations and experience have led him to believe that grass will respond better to proper fertilization than any other farm crop.



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POULTRY

Edited by F. V. L. TURNER

All letters, inquiries and requests in reference to poultry, should be addressed to the Poultry Editor of The Practical Farmer, Philadelphia, Pa.

Practical Poultry Talks

Next Year's Poultry Machinery

There is a three-sided difference between the use of a hen to hatch eggs, an incubator and the sun-dried hatcheries of ancient Egypt.

There is nothing new since the time of Solomon in setting a hen; antedating all other hen wisdom, the Egyptians hatched without hens; the incubator, the present day affair of oil burning lamps or hot-water heaters, is not much over fifty years of age—the Egyptians hatched artificially over four thousands of years ago, historically proven, and a good many more thousands of years in the same manner before this historical record began, and they are still at it.

Now all of us remember that Solomon said there was "nothing new under the sun!" Whether he had in mind the Egyptian hatcheries is of little moment, but we are much concerned about the forgetfulness of the many poultry raisers who have not found that the incubator is just as necessary to a successful poultry business, large or small, as the hen that lays the egg or the egg itself.

Admitted that the hen is a sure producer, or rather reproducer, in her function of hatching eggs into chicks, we must admit that the hen suits herself about the time she performs this function; the incubator suits only its owner, and under ordinary care is not only less trouble than a willful hen, but nearly, if not quite, as successful in the long run.

All of this has to do with only one case, the incubator versus the hen. Take the uncertainty of the hen alone as the evidence against her, and the ready-at-an-minute qualification of the incubator wins.

Every fall and winter these columns are devoted to an appeal to the hen hatching to change to incubators; many readers each year buy and put into operation these simple mechanical devices and realize the fruits of a small investment; new readers, and some old ones, falling into line. It is safe to say that there are few, if any, regrets, while there is much pleasure and profit, because of the change from uncertain nature to certain artificiality.

All of the story of success in securing fall and winter eggs lies in getting out the pullets at the proper moment in the spring. The fall is now upon us; the hen hatched pullets, some hatched too late, are now proving the failure of the hen as a reproducer of profitable poultry and, on the other hand, the incubator chick, that came along at the bidding of the incubator owner, and was well nurtured, kept growing and properly matured, is now a profit maker, a reality as a money getter.

In connection with this incubator scheme there is the brooder, or artificial mother—some made for 50 chicks, some for 500, all good, all necessary to bring up the incubator-orphaned peps.

From the cotton flannel strips tacked to the upper side of the box, to the coal or oil burning brooder for 500 downy balls of fluff, is a far cry—far historically and far because of the nearer approach of these scientifically wrought machines of heat and shelter to the mother functions of the hen. Figure as you may, from the 25-egg incubator and its brooder adjunct, to the 25,000 mam-

moth machine and its myriad brooder assistants, against the hen or for her, the mechanical end is always winner.

Look back over your season's work; its success or failure can be measured in one short statement of fact: "I did or did not use an incubator." Your efforts since hatching time last spring are now productive or non-productive as the case rests upon the means employed.

Poultry raising is profitable; so is any other business when rightly conducted. Any business can be made to fail. Largely the poultry business depends for success upon doing the right thing at the right moment. No raiser of farm crops would plant his corn in August any more than he would sow clover in January.

Put by the hen and take on the incubator and brooder this coming spring, and change the hen-hatched losses to incubator-made profits.

Running hand in hand with this incubator-brooder business is the matter of selection of pullets for next year's yearlings, to be used for breeders in the spring of 1918.

Those birds that are hatched very early, that laid early and that have molted, or will molt later, may be excellent breeders; those that are hatched very late and through heredity lay in four and a half to five months should be rejected.

Light breeds or varieties hatched April 1st should not lay before October 1st; heavy varieties hatched March 1st should lay by October 1st.

If, after intelligent and careful selection, a strain has been built up that will lay in 30 days less than the time here given, hatching should not take place so early.

There is much to be said for and against the time it takes to mature a layer; the bird that requires six months instead of five is more expensive but it is possessed, if all other conditions were equal, of a more robust and vigorous constitution and her age is largely in favor of greater and more certain productiveness. On the other hand, a quick maturing bird begins profit paying early, costs less to mature but may be a failure in constancy of performance and less vigorous, a further failure as a breeder. Care in selection, as the result of observation, will indicate the proper course to pursue.

Clean nests are just as pleasant to a layer of eggs as clean bed clothes to a man. Plenty of clean, fresh straw, or any other suitable material, sprinkled with lice powder, will induce the birds to spend more time on the nests and do more work.

Wonderful Egg Producer

Any poultry raiser can easily double his profits by doubling the egg production of his hens. A scientific tonic has been discovered that revitalizes the flock and makes hens work all the time. The tonic is called "More Eggs." Give your hens a few cents worth of "More Eggs" and you will be amazed and delighted with results. A dollar's worth of "More Eggs" will double this year's production of eggs, so if you wish to try this great profit-maker, write E. J. Reefer, poultry expert, 9308 Reefer Bldg., Kansas City, Mo., who will send you a season's supply of "More Eggs" tonic for \$1.00 (prepaid). So confident in Mr. Reefer of the results that a million-dollar bank guarantees if you are not absolutely satisfied your dollar will be returned on request and the "More Eggs" costs you nothing. Send a dollar today or ask Mr. Reefer for his free poultry book, that tells the experience of a man who has made a fortune out of poultry.—Ad.

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Our San Joaquin Valley books have the details. Just drop a postal to-day and say "Send California books." Tell us what kind of farm you want and we will gladly get you the fullest possible information through our agricultural agents who help to locate settlers in productive sections and assist them in selecting the right crops to insure permanent success after they are located. The San Joaquin interest in you continues and the service is free.

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What We Are Asked

Chickens and Berries.—J. G. E. Delaware, writes: "I have purchased for this fall setting a few raspberry and currant plants. Also some rhubarb. Will the chickens eat raspberries and currants to the extent that they could not be set on a lawn border for family use where chickens run?"

Chickens will not, as a rule, eat rhubarb; when green food is scarce rhubarb leaves are eaten sparingly. Berries of all kinds are relished by all feathered animals. It is not advisable to plant berries within reach of poultry if the family expects any for household use.

Some little success in restricted berry raising has been obtained in allowing the poultry to keep down insect life on the berry bushes until the berries begin to round out, then protecting the bushes with poultry netting or confining the chickens. Where spraying berry bushes for fungi or insect enemies, berry bushes have been poisoned; all berry bushes need spraying and do not need chickens to keep down pests if preventive poison sprays are used.

Egg Ration.—J. M. D. Illinois, writes: "In a recent issue of your paper I saw a green egg laying contest this year, but no green food was mentioned. When your hens are penned up so no green food can be had isn't alfalfa meal or something of that kind necessary? Also, in the Delaware ration you give gluten feed 100 lbs. What is used for this that is easily obtainable, as is any green feed necessary with the Delaware ration? Should there be any alfalfa in the feed? I have White Orpingtons in a dry pen on the back end of a city lot. How much should they be fed? I have been guessing."

The experiment station ration prescribed by New Jersey for its laying contest contemplates, so far as we know, yards containing alfalfa pasture. This pasture is an old stand and its growth is well established.

In the Delaware laying competition no green food has been used for two years, these two years giving better yields than where green food, with its bulk of fibre, waste, displaces egg making rations. Gluten can be dispensed with and old process oil meal, about 10 pounds of oil meal to 100 pounds of mash mixture, or about the proper proportion to prevent liver disturbances. No salt is used in the ration at either station. Weight of food for a hen is determined by the condition of the hen, when it goes to roost. If it is full the fowl is well fed; if not, that's the answer. Dry mash from daylight to dark and then grain from 3 o'clock in winter (4 o'clock in summer) to fill the crop, is the way the hen feeds herself and she governs the amount.

Chicken Pox.—D. B. O. Delaware, writes: "We have tried many remedies for chicken pox and find that salts and sulphur give the best results. Salts, however, rather, the prevention of the disease, troubles more than the cure. What is necessary to do in order to prevent the yearly return of this disease?"

Poultry science has not yet reached, that is, the medical side of it, either a positive cure or preventive in chicken pox. Humans contract chicken pox; it becomes epidemic to a section of the country, or may be epidemic to a small locality; the disease runs its course and some of those affected may contract the disease a second time. To prevent its return is as yet impossible, either with humans or poultry. (Do not be misinformed about this disease in connection with poultry; its dissemination or spread is not due to any particular insect—its first appearance is always internal, the exterior evidences, sores or ulcers, come after the disease is built up in the blood.) Simple depression, that "mopy" appearance, comes first. The low order of bacteria causing this disease cannot live in the presence of sulphur, hence sulphur is the logical remedy. How to get the sulphur into the blood of the fowl in proper quantities is the problem. A hen will only take into her circulation so much of the quantity depending upon her condition, regardless of the dose administered. Since Epsom salts (evidently the kind meant by D. B. O. in his letter)—are depressing because of the excessive bile drainage caused by their use, it is assumed that the hen's low vitality; temporarily, will permit an overcharge of sulphur when it is given in conjunction with salts. Dampness is productive of great activity of the chicken pox germ and should be guarded against, particularly at this time of the year. One of the safest and surest preventive measures is the use of Epsom salts and sulphur, each a tablespoon heaped full to

every 25 chickens once a week from September 20th to December 1st, coupled with dry quarters. Remove affected birds to dry quarters and use a dose for one fowl every three days until three doses are given, then follow with equal parts, same quantity as above, of sulphur and sulphate of iron.

Late Molting Hens.—R. N. E. Pennsylvania, writes: "As late as December we find a few hens with scarcely any feathers, the molt being very complete. Can we hasten the growth of feathers now in order to prevent loss of these heavy molters later?"

To some extent you can, but why do it? You are only building up a family of weaklings by saving these hens. Their vitality is not sufficient to their needs, else they would not, in the first place, molt so completely, and in the second place they would recover more quickly if their stamina was greater. It is far better to let them die from low vitality (nakedness, in this case) than to drag them back from a timely death to produce offspring of extremely doubtful vigor.

"System" for Testing Layers.—M. I. S. New Jersey, writes: "What is the 'system,' so called, for testing layers? I mean, to ascertain the number of eggs they will produce in one year."

There are such systems advertised. To go into details would require quite a little space; in fact, the system generally used is published in a book of nearly a hundred pages. Primarily the "system," if it can be so called, consists in a full knowledge of hen anatomy, the bone formation, their size, length and contour, coupled with a few external appearances and conditions. Its use is followed by many poultrymen with a great deal of success.

The Lay of the Hen that Lays

W. E. VAPLON.

An egg a day the old hen lays, with which the housewife blithely pays for books and clothes and children's shoes, and Grange and Farmers' Union dues. The old hen pays the rooster's board, she buys the gas to run the Ford; she even buys the old man's cud, and still he meets her with a thud, if in the feed box she should stray, or roost upon his new mown hay. She buys the soap to clean the kids, the sugar and the family lids; she's up the first one in the morn, she's out and hustling in the corn before the old man chucks his snore to call the boys to do the chores. She's always happy at her work, no one can say that she's a shirk. She don't belong to any club, believes in paying for her grub. She does her work and doesn't care how others comb or curl their hair. She lives to serve and serves to live, gets all she can, is free to give of what the good Lord gives to her. A message from the hen to you is that there are but very few so thoughtless for their own reward, and few who sing and work so hard to make this old world a fit place to live in for the human race.

Colorado Agri. College.

Worth While Suggestions

Because a hen can get along on a ration of whole corn is not the reason for expecting eggs. Try a mixture of grains, whole and ground into a mash. Beat the "bug" to it—put lime in the drinking water and germs die in the houses, nests and on the roosts.

Think seriously over that little matter of fooling the hen next spring—buy that incubator and break up biddy from sitting; you will get more chicks, and get them on time, and you will get more eggs.

Eggs are going to be high this winter—they are climbing upward now—keep your eye on your flock until January 1st and note where the eggs come from. It is safe to state that the earlier hatched pullets will do the best of the work, the old hens and late pullets doing most of the work around the feed troughs.

Should you find a crack in the hen house don't go in and perch up behind the kitchen stove to think about fixing

it next spring—do it now and save a lot of trouble this winter.

When you find that a house full of pullets lays better than a house full of hens what's the answer? Hens are fine for breeders, but that's all.

A good male is more than half the flock.

Building up the home trade for eggs, broilers, roasters or stewers is about as profitable as any branch of business; the yearly income is exactly the size your capacity makes it.

The single storekeeper in the smallest village is always in mortal fear of direct selling by the farmer.

It's a poor business that gives the bulk of the profit to the middlemen.

Selling at home means no commissions, no freight while getting the retail price.

The distance between the producer and the consumer is always measured by the price the producer gets and the price the consumer pays.

A well-mannered farm youth can speed up on salesmanship in soliciting trade for the home products.

Will some of our readers help perfect a ration that will not only cut the cost of feeding but perhaps increase and further develop a farm product that is now at a minimum because of the lack of demand? This suggestion is induced by a statement from our federal Agricultural Department relative to the use of cotton seed meal; it appears that in Denmark the average consumption of this by-product of cotton equals 478 lbs. per mature cattle per year and in its home country, America, about 24 lbs. are used in twelve months by each full grown cattle.

Poultry Show Dates

Patterson, N. J., Poultry Association annual show, Nov. 21-25; C. D. Forney, secretary, 1524 N. West Third St., New London, Conn. Nov. 22-25; H. W. Schriver, secretary, Groton, Conn. Pleasantville, Pa., Nov. 22-25; George H. Baker, secretary, Pleasantville, Pa. Nov. 27 to Dec. 2; A. J. Henning, secretary, 1812 Carson St., Elizabeth, N. J., Nov. 28 to Dec. 3; A. J. Churchill, secretary, 724 Canton St., Wilkes-Barre, Pa., Dec. 4-9; F. N. Roll, secretary, Wilkes-Barre, Pa. Dec. 4-9; G. C. Ott, secretary, 1106 Linden St., Woodbury, N. J., Dec. 8 and 9; L. Chessman, secretary, Sewell, N. J., Buffalo, N. Y., Dec. 11-16; W. H. Gaude, secretary, 322 Electric Bldg., Chicago, Dec. 13-18; D. E. Hale, secretary, Monon Building, Stroudsburg, Pa., Dec. 12-15; E. M. Paxton, secretary, Stroudsburg, Pa. Dec. 26-30; H. R. Vander-slice, secretary, Boyertown, Pa. Dec. 20 to Jan. 3; Charles D. Cleveland, secretary, Eatonville, N. J.

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Union City, Pa., Jan. 2-5; E. C. Mosher, secretary, Union City.
Johnstown, Pa., Jan. 8-13; Earl Penrod, secretary, 104 Union St., Philadelphia, Mich. Seed Company, Jan. 9-11; T. A. Eddon, secretary, 518 Market St., Boston, Jan. 9-13; W. R. Atherton, secretary, 36 Brookfield St., Oueda Poultry Association fourth annual show, Oueda, N. Y., Jan. 9-12.
Media, Pa., Jan. 17-20; P. S. Platt, secretary, Wallingford, Pa.

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Our Barter Column

This column is for our Subscribers only—no Real Estate Agents, Dealers or Manufacturers. 2 cents per word; no advertisement less than 50 cents.

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The Women's Exchange

This is the farm women's own department—for them and by them. It is devoted to the discussion of topics of everyday interest to the women of the farm family. The Practical Farmer invites—expects—you not only to write your experiences on the topics under discussion but also to propose topics for future discussions. The best letter published herein each issue will be awarded a prize of one dollar, and for each other letter published we will pay fifty cents. Address: WOMEN'S DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

DECEMBER 1.—Home-made Christmas gifts. Describe and give full directions for making one article suitable for a present. Give us something new if possible. New ideas are eagerly sought every year, and this Exchange ought to be mutually very helpful.

DECEMBER 15.—Christmas Trees, Decorations, Entertainments and Dinners. We want unique suggestions for any one or more of these features of the Yuletide festivities. Tell us, in not more than 250 words, of your discoveries as to how Christmas may be brightened in the farm home.

JANUARY 1.—Have you made or lost money by raising turkeys, ducks, geese or guineas? Give briefly your experience and the figures on the investment and its profit or loss for any or all of these lines. Limit your manuscript to 250 words.

Get your contribution in early. If it does not reach us at least 15 days before the date of issue, it will be too late.

Planning the Sunday dinner. How do you arrange to have good dinners without having to spend the whole forenoon in the kitchen or stay home from church? Of what do these dinners consist?

Mrs. W. R. W., Charleston, S. C.—Saturday being a very busy day with the children home from school and extra work to do—I can't crowd Sunday's work in, even to enjoy a much needed "day of rest and devotion." Nevertheless I can always arrange to have a free Sabbath, without "robbing Peter to pay Paul," as it were. This is the way I manage: I plan Saturday's and Sunday's dinners along similar lines, cooking double quantities of nearly everything but making rather different dishes out of the same materials. As every Sunday's dinner is not just the same as the previous week, I will describe a number of dishes that I use on different occasions. For instance, on Saturday I cook a ham, a roast or whatever meat is desired, using it Saturday, and the remainder sliced cold on Sunday; if chicken or poultry it may be made into a salad for Sunday's dinner. For vegetables I cook a quantity of sweet potatoes, pumpkin, turnips or whatever variety is wanted, using half on Saturday and mashing and cooking up with butter or bacon fat the remainder on Sunday. In the case of sweet potatoes I slice a quantity, place them in an agate pan on Saturday and put aside; on Sunday it is a simple matter to pour over them a little syrup flavored with cinnamon or nutmeg and place in the oven (or on top of the stove) to candy. This is a delicious sweet dish, and may serve as a dessert. A double quantity of macaroni may be cooked on Saturday, the first day with beef gravy, tomato sauce and cheese (without baking); the remainder is arranged in a pudding dish with alternate layers of grated cheese and set aside. On Sunday pour over it an unsweetened custard and bake just before serving time. This macaroni pudding, or pie, as it is sometimes called, is just as nice as when all prepared the same day. Canned corn with cream or butter and milk makes an excellent hasty pudding, either baked or just boiled. Mashed Irish potato from Saturday, flavored with minced onion and thyme or sage and dipped in egg, may be fried as balls on Sunday. Peas, beans and the like, in winter, are perfectly good warmed over. Heavy desserts may be made on Saturday—pies, cakes, etc.—while if a light dessert is desired, fruits, apples, pears, peaches, prunes may be made into a "whip" with the addition of a bowlful of well beaten egg whites, whipping the whole together lightly.

Many housewives make excellent use of the fireless cooker to help out on occasions like these, but I prefer the double-preparation method as avoiding the work of preparing the meal for the cooker on Sunday morning. In summer when it is not possible to keep things from one day to another, I plan a light, nutritious meal for midday Sunday, serving gelatine, junket, or something that may be prepared before-hand, as a dessert.

E. S., Hepburnville, Pa.—We try to observe Sunday as a rest day instead of a feast day. In summer but one meal, breakfast, is cooked on Sunday. Dinner is a picnic spread consisting of cold meat, cheese, vegetables raw or in salad, eggs and dessert, coffee, cocoa or tea. Chicken, ham or beef is boiled or baked on Saturday. Salad dressing and vegetables are cooked or otherwise prepared on Saturday. Potatoes, onions, radishes, lettuce, beets, tomatoes, green beans, cauliflower, cabbage, green peppers and celery can be used in a variety of ways in salads or as sandwich filling. Cream cheese or cottage cheese require little preparation. Eggs, to be served cold, are either stuffed, deviled or pickled. If a hot drink is desirable, it is quickly made over an alcohol lamp. Dessert is either pudding, fruit, cake or pie, or a combination, all of which can be made the day before.

In winter when the weather makes a hot dish desirable after the 3-mile drive from church, we try to have something that may easily be heated. Some people use the fireless cooker for Sunday dinner, but that makes too much extra work in the morning when there is only one pair of hands in the kitchen and that pair must help milk and care for the poultry.

Beans, baked on Saturday and kept hot in the oven Sunday forenoon, form the basis of a good Sunday dinner, served with tomatoes and apple, celery and nut salad. Frequently a soup that is not spoiled by reheating, is cooked on Saturday and warmed over for Sunday dinner. Vegetable soup and bean soup are fine for this purpose, served with potato salad and lettuce or celery. Rice pudding, tapioca pudding and corn starch pudding are substantial desserts to serve with Sunday dinners.

Of course, all this means more work on Saturday. But in a family where all attend Sunday school at 9.45, and are active in church and Sunday school work, it is necessary to gather a double portion of the manna the day before the Sabbath.

Mrs. R. M., Denmark, Ia.—I believe one of the most common mistakes made concerning the Sunday dinner problem, is in making it a feast day instead of a day of rest and abstinence. It is quite proper and praiseworthy to take extra pains to set an unusually attractive table on Sunday, but that means the best china, the newest silver, some flowers and some plain food tastily prepared, instead of a great variety of everything good to eat. There are numerous foods that can be prepared on Saturday. Cakes can be baked. The yolks of the eggs used for mayonnaise dressing to put on lettuce, cold slaw, potato salad or whatever may be most easily prepared. Potatoes boiled in their jackets on Saturday may be quickly creamed, fried or prepared for salad on Sunday. A very wholesome dinner can be served with oyster soup and crackers as the first and main course, with celery or pickles, and some canned fruit for dessert. Without a doubt vegetables from the garden are the best, but for a quick and easily prepared meal the canned ones are the best. Eat from the garden the other six days of the week. However, lettuce, radishes and spring onions take but a few moments to prepare, if one likes them.

We have added a fireless cooker to our kitchen department and think it unequalled for providing a warm Sunday dinner. Dress a chicken on Saturday, start it boiling before going to church, put it in the cooker and it is ready to eat when you get back. Heat the radiators over a hot fire, place the chicken between them and it comes out baked. A cheap cut of meat comes out tender and unbelievably palatable. It is ideal for baked beans or cooking rice.

There are a number of other things that should be on every housewife's emergency shelf. Dried beef in jars or in bulk, if not kept too long, peanut butter, cheese either in jars for spread or fresh cream cheese, jellies and pickles. If all that has been mentioned was served at one time I am afraid it would

not be an ideal dinner, but they are given merely as suggestions, from which to choose.

The table should be set and covered with a cloth before leaving for church. Then it is a quick matter to start the oil heater or open the fireless cooker and have something warm to eat. But above all, do not attempt to serve too much, because on a rest day our bodies do not need so much food as when we are working.

Mrs. T. E. W., Jr., Wyoming, Del.—It has never been our plan to let the

Sunday dinner keep us home from church; there are so many good things that can be prepared in advance, either to be reheated in a few minutes, or eaten cold. Roast your chicken on Saturday and serve cold with hot gravy, which can be heated in very little time, while the sweet potatoes are heating in the oven, they having been boiled, skins removed and placed in the pan with a bit of butter on each. White potatoes are put through the ricer, cream and butter added, to be heated in the oven; they will come out nice and light. These can all be heating while you are

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So long as my supply lasts any little farm girl can get "Little Miss Prim" to mother to her heart's content—without paying a cent for her. To learn how, just fill out this coupon and mail it to me immediately. Many little girls have already been made happy by the dolls I've sent them.

M. D. GORE

P. O. Box 1321, Philada., Pa.

placing your butter, sauce and pickles upon the table, with a pudding, custard or canned fruit with cream, any of which can be prepared the day before. We think this is quite a good dinner. Of course, the meat can be varied—roast pork, roast beef, duck or whatever is most convenient and most liked. Quite a pleasant change for our Sunday dinner is chicken, rabbit or pork salad, Delaware biscuit, butter, pickles and coffee, all of which we prepare in advance except, of course, the coffee.

The thing required to get the most needed time for church and rest on Sunday is forethought. If we are going to serve stewed canned tomatoes, lima beans or peas, they can be opened and placed in the pans, so that it is only a few minutes' work to warm them. Any of the salads—celery, cabbage, Waldorf, potato, and various others, can be prepared ready for the dressing at the last moment.

D. M., Industry, N. Y.—A very good Sunday dinner, and also a company dinner, can be planned without having to work all Sunday morning over kitchen range. Potatoes can always be pared Saturday morning with those for dinner; then Sunday after coming home from church they can be boiled in 30 minutes, or a pan of escalloped potatoes may be baked for Saturday's dinner, and half of them saved and warmed over the next day. Many people prefer escalloped potatoes after they have been baked the second time, and they are indeed very good. As for meat, some housewives use salmon or canned meat for Sunday, but as we have grown tired of it we usually make a veal or beef loaf or have baked ham or roast beef hot for Saturday noon and cold with jelly on Sunday.

There are many kinds of vegetables which need but little preparation, and if the rest of the dinner is practically ready the housewife will not mind spending 15 minutes to prepare some favorite vegetable. However, in cold weather we often boil some extra carrots and onions on Friday, taking the extra portions out and putting in a cool place until Sunday. Cold diced carrots can be creamed in an instant, and cold boiled onions are very good escalloped for Sunday. Bread, butter, coffee and jelly or pickles can always be supplied for the Sunday dinner.

The dessert is, I think, the hardest problem of all. In the winter we often make a freezer of ice cream or a large can of mousse Saturday afternoon, and then open it on Sunday. Usually there is some left for Monday, as it keeps well without much repacking in cold weather. There are several good pie fillings one can make in a few minutes if a shell is on hand, and as a shell will keep a week, one need not bake it Saturday with the other work. Cake and corn stewed prunes are also good, and when the prune pits are removed and whipped, sweetened cream is piled on the top of each sherbet glass; it becomes a most tempting and nourishing dessert.

L. M. T., Fine Creek Mills, Va.—To prepare our Saturday dinner that will be appetizing on Sunday requires skill. This mother possesses in a marked degree, and our Sunday dinners are never failures. Sometimes their preparation begins Friday night when the dough for light bread is made, and a ham put to soak, ready to be boiled on the morrow. Saturday morning we prepare a chicken either to fry or roast; if the latter it is cooked on Saturday but if we want fried chicken we keep it in salt water until Sunday morning, and fix it while getting breakfast. We usually have vegetable soup or Brunswick stew, baked apples, baked sweet potatoes, or glazed ones. These can also be cooked while getting breakfast, if they are prepared and put into the baking dishes Saturday. These dishes, with butter, cold tea, milk, cake or pastry, or in season, substituting fruit and melons, save hours of work Sunday morning, for they can be heated over in half an hour, and the whole family feels better for the change from the daily routine.

Mrs. J. F. F., Zion Hill, Pa.—As my family are all very fond of chicken dinners, we usually have them on Sunday. Instead of cooking just enough for ourselves I cook one chicken extra so we can have plenty if some of our friends come unexpectedly, as quite frequently happens. If no visitors come it will be the dinner all ready for wash day. I always prepare and cook my chicken, even make gravy, on Saturday. It will

stew while I do the baking. Then we can all attend church in the morning and also Sunday school in the afternoon. I have potatoes all ready to boil (cut into eighths to boil quickly), also boil sweet potatoes on Saturday. Then on Sunday it will require about 25 minutes to get dinner on the table. The sweet potatoes being boiled and sliced lengthwise, are quickly browned in a pan with drippings. While Irish potatoes are cooking I open some of my canned vegetables, also whatever fruit I want. When vegetables are hot I mash potatoes. (By the way, these are much better if instead of adding butter to them, as most housekeepers do, an egg is used instead, as they can then be beaten light and are a finer color.) When this is all served I bring out some of my fresh pies, usually pumpkin, just now, and this with the fruit and cake make a fine dessert. When cranberries are in season I also make sauce on Saturday, or sometimes a salad instead. I never allow the dinner to keep any one home from church. For supper we have only a light lunch with cocoa.

Mrs. C. P. D., Mallet Creek, O.—This is the way I arrange to have a Sunday dinner without spending the whole forenoon in the kitchen or staying home from church, a thing I would not do. On Saturday I bake bread and pie and occasionally a cake. I purchase a soup bone or kill a chicken, which I cook for 30 minutes, then put it in the fireless cooker. Saturday evening I take this out of the cooker and prepare a vegetable soup as follows: One small carrot, one small onion, a few potatoes, and a few tomatoes if I have them; chop these fine and fry them in butter and add to the soup. Let this boil up and put in fireless cooker. I prepare potatoes and one other vegetable the night before, and in the morning I boil them up and put them in the cooker just before I start for church. Upon my return I take out the soup and warm it up, and take out the vegetables, which will be piping hot. The table is set before we go to church and in 15 minutes after our return we are eating our dinner. I do not believe in getting an elaborate dinner on Sunday when we are not working. A simple dinner, as outlined above, is sufficient for health.

Mrs. K. S. W., Tuscarora, N. Y.—In summer when we have no Sunday guests, we seldom start a fire to cook dinner. Friday I bake white bread and cookies. Saturday I cook meat—if chicken it is dressed Friday—bake beans and a couple of graham loaves, make pie, pudding, Dutch cheese, and with the supper fire cook potatoes enough to last next day. With the made-in-advance dinners we serve potatoes in salad, having a jar of dressing on hand, diced milk or lemonade, which, with fresh fruit, furnishes a wholly satisfying meal with little more work than setting the table. Sometimes we picnic on the lawn or in the grove, then wooden plates and paper napkins eliminate dish-washing.

When the occasion requires more formality we serve fried chicken and creamed potatoes, or escalloped potatoes, made Saturday and reheated for serving. Other fresh vegetables are made ready the night before for cooking—peas shelled, squash cleaned, cabbage shaved—or else canned vegetables are served. If the family dines on Sunday evening, have it frozen early in the morning from custard made Saturday evening. Canned peaches served with whipped cream and cake is an easy and delicious dessert. Our family favors light Sunday dinners, and often a generous dish of tomato soup, with crackers, is the main feature.

Whether little or much be required, let us not sacrifice our Sabbath. Take the guests to church with you. Plan an easily served breakfast of ready cooked cereals, eggs and fruit, and persuade the family to eat at the usual hour. Late Sunday rising spoils the day. With proper forethought and the co-operation of the housemates, our rightful Sundays of rest and worship are easily attained, so that we are strengthened, physically and spiritually, for the coming week's labor.

M. A. B., Flora Dale, Pa.—In the preparation of meats the fireless cooker is an especial Sunday help. It may be made ready while the breakfast fire is going and no further attention given it until dinner is ready to serve. Chicken may be stewed the preceding day, removed from the stock, the stock heated

on Sunday and the chicken replaced in it to heat. Sometimes we brown the chicken in the frying pan after it is heated through. Soups from meat or chicken stock are easily prepared in advance. Steak, pork chops, croquettes of chicken, beef or fish are all cooked quickly. Macaroni and cheese may be prepared Saturday and reheated Sunday

in a pan of hot water. Lima beans and dried corn can be cooked the previous day and heated up and dressed on Sunday. White and sweet potatoes pared the evening before, may be cooked in a reasonable time. Dried apricots, pears, peaches and prunes are good accompaniments for the Sunday dinner in winter. Salads also help.

Our Fashions and Patterns

Full directions for making, as well as the quantity of material required, accompany each pattern. Patterns are perfect-fitting and seam allowing. When ordering write your name and address in full, state the number and size of each pattern you want, and send 10 cents for each. Address: FASHION DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.



7980.—Ladies' waist. Cut in sizes 34 to 42 inches bust measure. To be made in one or two materials. The dress is cut in one piece.

7974.—Children's coat. Cut in sizes 2, 4, 6 and 8 years. The coat has a circular skirt cut in three gores.

8031.—Ladies' dress. Cut in sizes 36 to 42 inches bust measure. The dress is cut in one piece and is gathered to yokes.

8045.—Children's dress. Cut in sizes 2, 4, 6 and 8 years. The dress slips on over the head and may have long or short sleeves.

8026.—Ladies' shirtwaist. Cut in sizes 36 to 42 inches bust measure. The fronts of this waist are rolled to form revers.

8042.—Ladies' apron. Cut in sizes 36 to 42 inches bust measure. The apron closes at the front and is cut in one piece.

8034.—Girls' dress. Cut in sizes 6, 8, 10 and 12 years. The dress is in one piece from the shoulder to the lower edge.

8025.—Ladies' skirt. Cut in sizes 24 to 32 inches waist measure. The skirt is cut in four gores and has side pockets.

8037.—Boys' suit. Cut in sizes 2, 4 and 6 years. The suit has bloomer trousers and the blouse has a back yoke and detachable collar.

8024.—Ladies' dress. Cut in sizes 36 to 42 inches bust measure. This dress has a plain blouse and a two-gored skirt.

Our Latest Fashion Book

Owing to the number of departments in The Practical Farmer, we are unable to illustrate as many patterns as we would like, therefore, we publish for the benefit of our readers, four times a year, a quarterly fashion magazine called—Every Woman Her Own Dressmaker—which illustrates hundreds of the most practical styles for ladies, misses and children, and tells how to make all kinds of garments. The regular price of this book is 10 cents a copy, but we will send it postpaid for 5 cents, or if you will order it at the same time that a pattern is ordered we will send a copy of the latest at 2 cents postpaid. Address: FASHION DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

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OUR EXPERIENCE POOL

All our readers are invited to contribute their experiences on the topics under discussion. \$2.00 will be paid for the best, and \$1.00 for the next best contribution, and 50c for each other article published. Contributions must be in our hands 15 days before date of issue.

Topic No. 1208, Dec. 1.—What provision have you made for next summer's ice supply? How do you cut and harvest it? Is your ice house above or below ground? Do you pack the cakes in or just dump them? What do you use to cover the ice? How much does your supply cost? Limit 250 words.

Topic No. 1209, Dec. 15.—We notice in our travels that a great many farmers in the East still shock and husk their corn in the field. If you are one of them, what care do you take of the fodder? Do you cut or shred it for feeding? If you feed it outside, what do you do with the stalks? Why don't you get a silo? Limit 250 words.

Topic No. 1210, Jan. 1.—What are you doing with the farm wood lot to conserve or increase it? If you are setting out new trees, what varieties are they? Have you provided any fire protection for it? What profits do you receive from it except fuel and fence posts for home consumption? How large is your wood lot and what do you yield, either in cord or in cords? Limit 250 words.

Topic No. 1207.—Is the breeding and raising of horses on a small scale profitable for farmers? Give us the benefit of your experience and the conclusion you draw. What prices are good horses bringing in your vicinity?

D. W. S., Grove City, Pa.—Our experience in raising colts on the farm has been almost as profitable as raising any other kind of stock. We have tried different breeds but find the Percheron best for all purposes. At the outset get a well bred dam; if it is not your lot to have a pure-bred one, take the next best. Always breed to a pure-bred sire, even if it does cost a handsome price; it will pay best when you come to sell. The time and trouble in bringing the colts to maturity will be just the same as for a grade colt, besides the pride and pleasure it affords in caring for them. Three years ago we came into possession of a grade colt, but when we came to sell it we had hard work to get \$150, but today, to one who has a good pure-bred the same age, \$250 is the price paid. It pays best to always raise two colts together on the farm, as they are company, especially when it comes to weaning time, at about five months. We never allow ours off the farm until after they are weaned. Feed soaked oats, wheat bran, a little oil meal and allow plenty of exercise. When weaning them always handle them gently, and teach them to lead when quite young. Good large horses are worth from \$250 to \$400.

E. A. B., Delevan, N. Y.—In regard to raising colts, I think it pays to keep one mare raising colts. I have made it pay. I had a mare a few years ago that raised 12 good, sound colts. I sold \$800 worth at an average of 1½ years old, and had one that I could have sold for \$250 at 5 years old. The last mare I had sold the mare. I have a pair of her colts now, one 4 years old and the other 3 years old, closely matched, weighing 2600 pounds and worth at least \$450. I sold two at four months old for \$65 apiece. The mares have always worked at all kinds of hard work, except for one week after foaling. Good horses bring from \$150 to \$300 each, according to style, weight, etcetera. Sound, heavy young horses are valued at \$200 and over.

C. C. C., Jr., Penn Laird, Va.—I have found the breeding and raising of horses on a small scale very profitable on the farm. Since horses are indispensable, and we must keep more or less of them, it places the farmer in a position to produce horseflesh as cheaply as any one on earth. I apply this theory only to good stock, for, in my opinion, the advantage in producing good stock applies to horses as well as any other animals. The cost of producing good blooded horses is but little more than producing scrubs. When selling time arrives the blooded colt or horse will bring from two to three times the price of the scrub. It matters not whether draft horses or drivers are desired, in breeding, good stock should always be the aim. We breed only good blooded mares to good blooded horses, and never have any trouble in disposing of either the colts or horses at a good profit. We have frequently sold 1-year-old colts of good

stock for \$100. Now deduct about \$20 for breeding fee, \$30 for keep and the rest is clear profit.

Sometimes we keep the colt until full grown, breaking it to work anywhere. When we do this we invariably get well paid for our trouble. We have frequently sold 3 and 4-year-old horses, broken to work anywhere, for \$300 each. Horses, like people, show good breeding, and a horse that is well bred is easily broken, as a rule, if taken in time. My experience is that the stock has a' to do with the profit in raising horses on a small scale on the farm. Breed only good stock and the profit is sure to come.

Mrs. E. M. A., Ashville, N. Y.—I have known people to raise horses at almost a total loss, so it certainly is not always profitable; but no doubt, like most other things, much depends upon the man, and my father-in-law has been very successful. He ran a 300-acre dairy farm for many years, milked 30 to 40 cows, and raised horses as a side line only. His stallion, a big, beautiful black, was his best work horse—so strong and able that he was usually worked against two other horses. Of course, such an animal would have been profitable anyway, but father kept, at

the same time, a big "buckskin" breeding mare and produced a good many valuable colts. Other mares were kept on the place, but this was a particularly profitable one. Father was a careful hand with horses and had very little "bad luck," which is a big item, since one failure can eat up the profits of several successes. He retired from farming only a few weeks ago, but still owns some of the colts he raised.

This fall "plugs" sell in this section for \$100 or under, and good horses don't sell at all. Nearly every one that farms has one or more for sale.

Mrs. S. R., Elmington, Va.—My husband has had success in raising horses on a small scale, and from this judges that it is a profitable business. Three good brood mares, that are most of the time able to do good farm work, and raise every year, or every other year, a nice colt apiece, prove their worth. The cost of feed and pasture is small, and when a nice 2 or 3-year-old colt is sold the price it brings nets a neat profit. Good draft horses are more in demand than any other in our vicinity, and range in price anywhere from \$150 to \$250 or \$300.

W. A. G., Vincennes, Ind.—I have had much experience in breeding and growing good horses in past years. I have never sold the colts until well matured and well broken. This is the way to make horse growing profitable. Good horses can be grown as cheaply, considering their age, as prime, large beef cattle. They require no more grain. Indeed, the very best horses I have grown

were brought up to the age and size for breaking on but little grain. They do better not to have much. Blue grass pasture, plenty of bright hay and corn fodder, with some threshed oats during winter, make ideal food for them.

I like to grow two, three or more together. Then when mature and broken, sell them. Keep the colts graded from weanlings to four or five years of age. As they are sold, one set follows the other, and so there is a regular system of breeding, growing and selling. This works fine and is very profitable to small farmers, or others growing them.

I want at least large grade mares, and these bred to the large type of the standard draft animals. Splendid, large and well trained horses now easily bring from \$275 to \$350 each, and the end is not yet in sight for high prices.

R. M., Denmark, Ia.—I do not feel that I have made horse raising pay, largely because I do not like to work with them, and partly because I have raised roadsters instead of draft horses. Since the advent of the motor vehicles the demand for road horses has decreased, while the war has created a market for the heavier types.

If the horse breeder secures good brood mares that he can work to advantage when they are in shape to be used, and handles the colts and feeds them well, quite likely he can add to his income in that way. I believe it will pay any one to raise enough horses for their own use, but I believe I can make more and quicker money feeding my farm products to good milch cows, or raising and fattening hogs.

The Practical Farmer

Live Stock and Dairy Section

EDITED BY W. H. TOMHAVE

A Developer of Pure-bred Stock

By THOS. H. WITTKORN

Nestled in one of the many beautiful limestone valleys of Montgomery county within easy access of Philadelphia, is Ridgewood Farms, the country home of Wm. Frazier Harrison. Six years ago these 326 acres had nothing to distinguish them from thousands of other acres on the outskirts of a large city. Today they stand as a living example of what well directed effort can do for agriculture.

Ridgewood has been developed as a

quire it, foresaw this opportunity. He took a lesson from the French farmers who years ago realized that the cheapest and most economical farm work horse is a pure-bred Percheron mare. This is the only kind of horses kept at Ridgewood, and they are a fine looking lot. They are active in the field, steady on the pull and present a good appearance on the road. By mating the mares to a good sire they are not only doing all the work of the farm, but they are

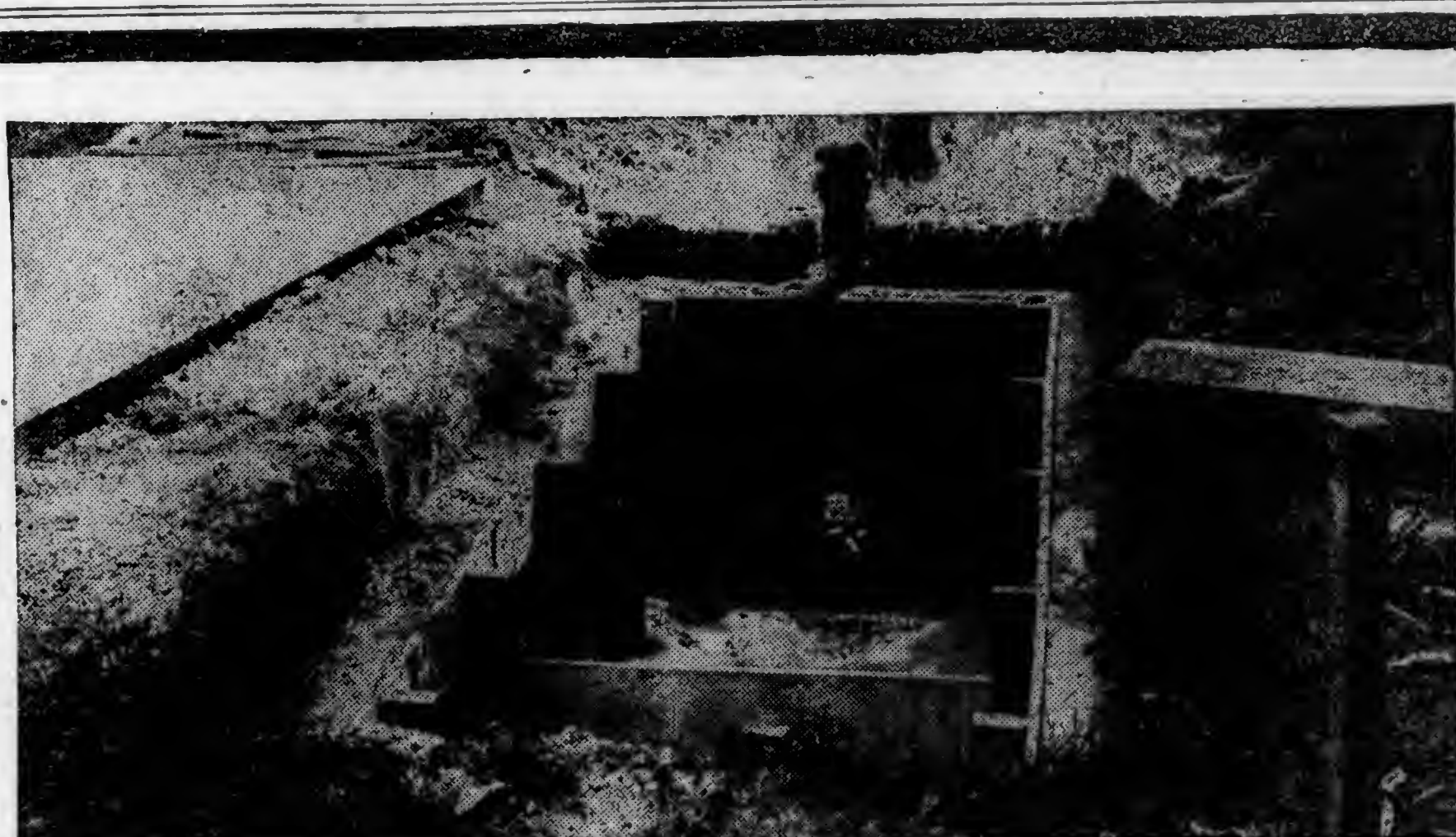
fact that they have never had a reaction in their annual tuberculin test, nor a case of contagious abortion. All of the milk is used on the farm. The herd is kept for the sale of breeding stock and no attention is given to the commercial use of dairy products.

The constant winnings of Berkshires at the International Live Stock Expositions at Chicago, especially in 1913, convinced Mr. Harrison that they were the breed of hogs for him to have. Today the Ridgewood herd of nearly 50 registered Berkshires is comfortably housed in a concrete and asbestos piggery, from

which was recently built Mr. Walker has evolved a plan of having heavy wire gates arranged on pulleys to raise and lower like window sash, so that he can divide the building into 16 pens (or as many as are needed) or have it one large corral where the sheep are kept every night as a protection against dogs.

The Highlands are black-faced sheep and are active, hardy and prolific. They give a good clip of wool, which generally grades as No. 1, and the average weight of bucks is 180 pounds and ewes 130 pounds.

A small herd of milking Shorthorns



Concrete Septic Tank in course of construction, with interior forms in place

A Concrete Septic Tank Safeguards Your Health

Health and comfort depend upon proper sanitation. Bathroom and indoor toilet can be had on the farm as well as in the city. They are a real economy, since they reduce sickness and sickness is an expense.

Everyone dependent upon the old cess-pool is familiar with the annoyances that come when the sewage backs up if the cess-pool becomes clogged. This is only one of its drawbacks. Worse yet, the liquids seeping into

the soil often find their way into the water supply and so spread disease throughout the family.

A concrete septic tank will remove the inconveniences and prevent the dangers of the cess-pool. It will so transform sewage

that its final disposal may be accomplished in a safe, inoffensive manner. A concrete septic tank needs very little attention. It is permanent. The resulting benefits and health insurance represent more than the outlay.

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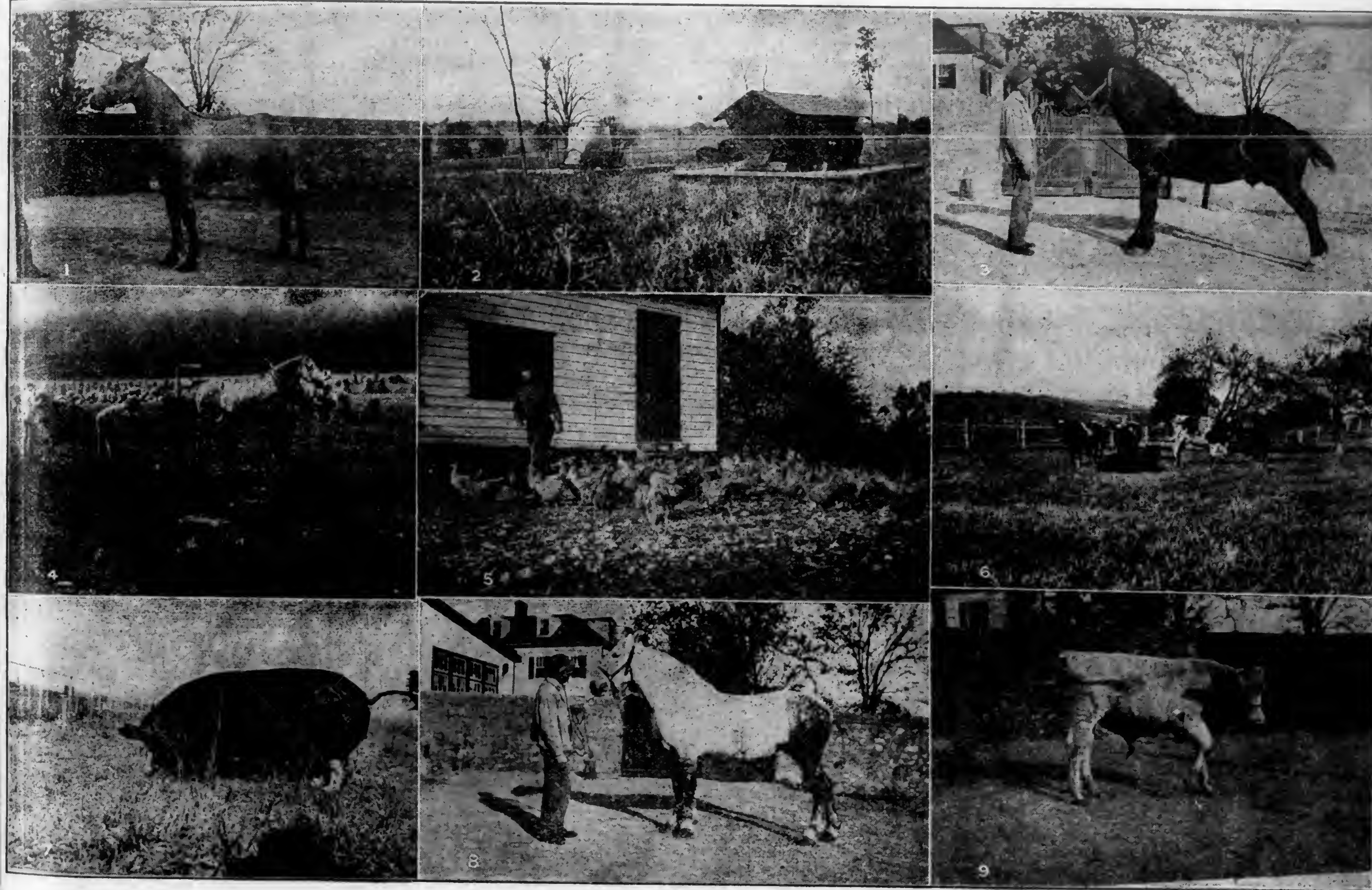
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stock breeding farm, and how well it has succeeded is testified by the great number of prize ribbons which are on display in the various barns. Percheron horses, Ayrshire cattle, Berkshire swine, Scotch-Highland sheep, Barred poultry, and just recently, milking Shorthorn cattle are the breeds which have been selected for further development.

Possibly, today, there is no line of stock breeding which has a better future before it than the raising of good draft horses. Mr. Arthur H. Walker, the manager, who, by the way, has been at Ridgewood ever since Mr. Harrison ac-

producing a lot of valuable colts. Today there are 32 horses on the farm, a great many having in them the blood of Hautbois (74026), the noted imported Percheron stallion. If it is the small farmers in France who produce the best breeding values and finished product which comes to this country, why is not the same thing possible here?

The farm herd of 20 Ayrshires is descended from noted A. R. O. producers and A. R. sires. A number of creditable A. R. O. records have been made on the farm under normal conditions, with an average test above 4 per cent. butter fat, but Mr. Walker is more proud of the

which radiate extensive runs planted with alfalfa and enclosed with heavy wire on concrete posts.

The self-feeder system is used in the lots. A mixture is made of 300 pounds cracked corn, 200 pounds red dog middlings, 100 pounds wheat bran, 50 pounds digester tankage, 25 pounds linseed meal and 25 pounds of a commercial stock tonic. The pigs have access all the time to this feed and fresh drinking water.

Scotch-Highland sheep are kept on the farm, and while they are pure-bred there is at present no association authorized for their registration. In the sheep barn

has recently been obtained from a noted breeder in Bradford county (Pa.) and so far Mr. Harrison is greatly pleased with them. It is his intention to give the dual-purpose idea of breeding a thorough test and no doubt interesting results will be obtained.

After experimenting with a number of different varieties of poultry, the Barred Plymouth Rocks have been selected as being best suited for the production of eggs and for table use. There are now on the farm 500 pullets in an enclosed range of 15 acres, and 400 cockerels. The poultry plant is equipped with a 2400-egg incubator and a hot-

water brooder system, with outdoor runs large enough to handle each hatching until old enough to place in colony houses. The 16 breeding pens accommodate 200 birds, and the laying houses provide for 1000 hens. Some custom hatching is done, but the main business is eggs for hatching, breeding stock and day-old chicks.

An apple orchard of 50 acres, which was planted in the fall of 1912, gives promise of soon turning considerable interest to horticulture on Ridgewood Farms. The trees are all in one block, except for the private roads running through them, and have had exceptionally good care. An entire season was devoted to preparing the field by draining, leveling, installing a water system and enriching the soil previous to planting the trees. In selecting the varieties the idea was to have fruit to market every month of the year. The trees are now spaced 18 feet apart, but when the fillers are removed the permanent trees will be 36 feet apart. Only high quality fruit adapted to this region is desired, so that the varieties include Stayman, Grimes, Jonathan, York, Wealthy, Transparent, Williams and Duchess. At the present time the orchard is being top-dressed with carloads of stable manure, which is received on the private railroad siding

adjoining the orchard. Each tree, and there are nearly 6500 of them, is protected by a wire guard from damage by rabbits.

Since acquiring the farms Mr. Harrison has had more than 28 miles of underground tile drains laid in various fields. In one place it was necessary to build a 3-foot sewer to take care of a brook which nature put in the wrong place. Quantities of lime have been applied so that a wonderful stand of clover and alfalfa is obtained, which when plowed under produces excellent corn for the silos and shocking in the field. The burned lime is obtained from nearby kilns as being unsuitable for building purposes, and costs \$4.50 a ton applied on the field.

The visitor to Ridgewood cannot fail to be impressed with the orderly manner in which the work is conducted. All the farm help work ten hours a day and each has his particular duty to perform. While the farm is the home of Mr. Harrison and he has a handsome house on a terrace of one of the hills overlooking the valley, it is not conducted solely as a gentleman's country estate. It is a thoroughly practical stock farm in which the investments have been carefully placed and it is doing a great deal for the benefit of the live stock industry.

Ayrshires at the National

By A. G. MORKKELL

New England is looked upon as the home of the Ayrshire breed in this country, as it was to this section that the first importations came and in it that the gradual development of the breed took place.

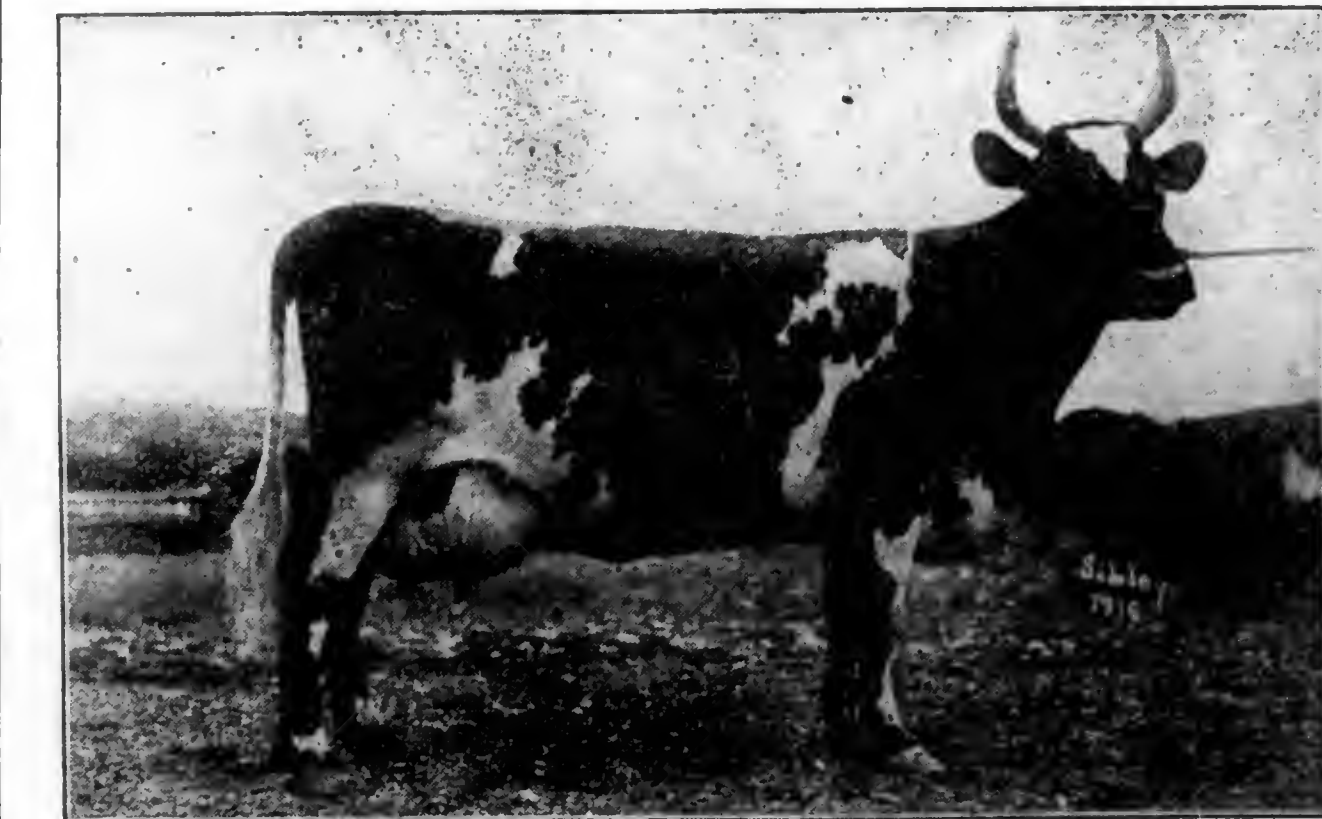
Therefore it was with pride that breeders from New England saw 160 of these beautiful Scots cattle lined up for placing at the National Dairy Show, this number being the second largest entered as representatives of the four dairy breeds.

There was a large Canadian contingent at the show, and a number of these enterprising men clubbed together and sent down an extra good herd to show, but the breeders on this side of the line had still better ones, so few ribbons went over the line.

It is fifteen years since the first official record as champion of the breed was made by Rena Myrtle, with 12,172 lbs. milk and 463 lbs. butter fat; and the progress of the breed in production may be estimated by the latest world's record for the breed, made by Garleagh May Mischief, which is 25,329 lbs. milk and 895 lbs. fat.

To the younger generation the change for the better in type cannot be as apparent as to those who have watched the breed for fifteen or twenty years. In the early days of its history in this country it was, to say the least, not remarkable for beauty. The color was generally a dark red, with often white marking which were distinctly ugly, the hair was rather harsh, probably owing to the rigor of the climate in the part of the country where they were kept, and poor feeding made them high in the air, very often, with little barrel room. Scarcely any attention was paid to shape of udder, and as a consequence the bags were every which way, with uneven teats which were exceedingly small. I have, in my collection, photographs which show the truth of these statements, and I have seen at shows, not more than seven or eight years back, Ayrshires of that old utility type, now being changed to one which adds beauty of form to excellence of performance.

At the National this year the forward march of this breed could be plainly seen. Auchrain Hattie 6th, owned



Auchrain Hattie 6th
Grand Champion Ayrshire Cow at This Year's National Dairy Show

type in this part of the United States. One of the most interested spectators at the ringside during this judging was Mr. W. P. Schanck, of Avon, N. Y., whose cow, Jean Armour 3rd, has just made a record of 21,938 lbs. milk and 859.65 lbs. fat as a 3-year-old, the second highest, for that age, of all breeds.

The winning aged bull was from the River Valley Stock Farm, Orford, N. H., Hillhouse Bonnie Scotland, who is well used to his place at the head of this class, having had that honor several times, deservedly, as he is a large, deep bodied, vigorous and handsome animal of splendid carriage. He is a son of Barrowmoss Swell 6408 Imp., and Hillhouse Daisy 8th 19952 Imp.

One of the most interesting classes in this breed was the 2-year-old bulls. The son of Imp. Hobland Perfect Piece, Imp. Hobland Piecemeal out of Burn Bul-

lion, sent over by J. H. Black, LaChute, Quebec, was pitted against Imp. Strathglass Gold Chink 16801, by Lessness Golden Pippin 6781 out of Auchlochan Brenda 35235. Perfect Piece is owned at Strathglass Farm, Portchester, N. Y., and Strathglass Gold Chink was bred there, although he is owned by Dr. Ness. Prof. Kildee, who judged this breed, and did rarely good work in a hard ring, had his work cut out for him here. Hobland Piecemeal was nearly all white, larger than Gold Chink, a little mite deeper in the barrel but not so smooth over the tail. A very good bull with splendid ancestry behind him, and a show bull of parts, yet Gold Chink was the winner in the eyes of most of the spectators the minute he stepped into the ring. He is a flashy red and white bull, as smooth as silk, snappy, with a perfect back line carried out smoothly over tall setting, a square rump, a good middle piece and a remarkably beautiful head. Grand Championship ribbon was added to the blue he won in his class.

A number of prizes were won by a Wisconsin breeder, Mr. Adam Seitz, of Waukesha, and quite a few by the Iroquois Farm, of Cooperstown, N. Y. In fact, there were winners in this breed from Vermont, Massachusetts, Canada, Wisconsin, New Jersey, New Hampshire and Maine, and the owners are, with two exceptions, farmers.

A strong, late maturing, prolific, handsome cow, the Ayrshire, with her good milk and her very constant fat (93 entries in 7 classes average 3.94 per cent.) is an ideal farmer's cow. Aside from these palpable advantages she is not as high in price as either the Guernsey or the Holstein.

There were many expressions of admiration for this breed from farmers at the show who had not before seen such specimens, and information as to



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were permitted, tell just what they were buying in the way of quality, and would acquire an education in these matters which they now lack.

Inspection came in for several hard raps, among them the statement that inspection had become a great annoyance and inconvenience to the producer, being carried to extremes; there having been duplication of inspections in some localities and none whatever in others, the milk from the uninspected territory coming in direct competition with that produced where inspection is rigid. Equipment and method have been the basis of inspection, rather than quality of the milk, which is really the most important thing after all, and this has led to the enforcing of requirements that many believe to be unnecessary.

Those who attended the different meetings at the National Show were much benefited by the speeches and discussions, and the exchange of ideas and good advice, was one of the most far-reaching results of this great gathering. The coming year should show, in the East especially, a great quickening in agriculture and dairying because of it.

Uniform Dog Legislation

One of the great drawbacks in the development of the sheep industry in Pennsylvania and the East is the damage done to farm flocks by tramp dogs. Dog laws of one kind or another have been passed by the legislatures of the various states from time to time, but many of them have been of such a character as to afford very little protection to the flock owners. The advocates of stringent dog laws from dog lovers, humane societies and other organizations that regard dogs of greater importance than the flocks of sheep on the farms. This, however, has often been due to the fact that there was no clear understanding of what the sheep interests desired in the form of regulations. No sheep owner desires to legislate against a useful dog in his proper place. The only thing they ask is to have the dog kept on the premises of his owner and not disturb the flocks of sheep. The useful dogs seldom, if ever, bother a flock of sheep; it is those that are allowed to roam about the country and have no owner. Such dogs have caused a large amount of damage and should not be allowed to remain at large.

The Philadelphia Wool and Textile Association has started an active campaign to create greater interest in the production of sheep in the East. This is to be done by means of education, demonstrations, and perfecting necessary legislation for the protection of sheep on the farm. The president of this association recently called a meeting at which plans were made to secure the proper kind of legislation for the protection of sheep in Pennsylvania. A committee was appointed to draft a suitable law to be presented to the next legislature. It is hoped that this committee will be able to present a law that will be acceptable to all interests and that will be adequate for protection of farm flocks in the future.

Marketing Pigs

With the present high price of corn and all farm feeds it is essential to market swine when they weigh from 175 to 225 pounds. The reason for advocating such weight is that the cost of producing a pound of gain materially increases with the increase in the weight of the hog. This additional cost of production is not recovered in a higher price for heavy hogs. The markets of the country at the present time demand a lighter hog than was the case ten or fifteen

years ago. The increase in the cost of meat of all kinds and the decrease in the demand for lard has brought about this change. The carcass secured from the average 200-pound hog is such that it can be utilized to advantage in cutting pork chops and the preparation of hams and bacon. The heavy pork loins cut from large hogs do not meet the demand of the average retail trade on account of being too large.

Considerable experimental work has been done to determine the amount of feed required to produce a pound of gain during various stages of growth. The results obtained in these trials bring out some very interesting facts. In the recent book on "Feeds and Feeding," written by Dean Henry and Prof. Morrison, of the University of Wisconsin, there has been compiled the results of not less than five hundred experiments, the average of which has been tabulated. In this investigation they found that young pigs weighing from 15 to 50 pounds required an average of about 6 pounds of grain per day for each 100 pounds live weight. It required about 300 pounds of grain to make 100 pounds of gain. The group of pigs weighing from 50 to 100 pounds required an average of 4½ pounds of grain daily per 100 pounds live weight, but they also required 400 pounds of grain to make 100 pounds of gain. The group weighing from 100 to 150 pounds required 3.8 pounds of grain per 100 pounds live weight daily. These, however, required 437 pounds of grain to make 100 pounds of gain. The group weighing from 150 to 200 pounds required 3½ pounds of grain per 100 pounds live weight daily, but consumed 480 pounds of grain to make 100 pounds of gain. The heaviest group, weighing from 300 to 350 pounds, required only 2.4 pounds of feed daily per 100 pounds live weight, but it required 535 pounds of grain to put on 100 pounds of gain. Thus, it will be seen that the amount of feed required daily for each 100 pounds of live weight decreases with the increase in the weight of the hogs. The amount of feed required to produce a 100 pounds gain materially increases with the increase in weight, which materially increases the cost of production. It is much more economical to produce two 200-pound hogs than to produce one 400-pound hog. If the hogs are marketed at the weight suggested, it not only becomes more economical to feed them, but it also results in quicker returns for the money invested.

Dehorn Feeders

In purchasing feeders on the open market or in the country it sometimes becomes necessary to include some cattle that have not been dehorned. There is no drawback in purchasing these if they are good individuals. They should not, however, be put in the feed lot with hornless cattle, as they usually dominate at the feed trough and keep others from doing well. As soon as such cattle arrive at the farm they should be dehorned. This may be done with a sharp saw or a pair of dehorning clippers. The animal must be securely fastened in a stallion or tied to a post when the operation is performed. The horn should be cut close to the head, so that no projection remains. Care must be taken not to cut too close so as to injure the skull. If there is excessive bleeding the cut surface may be smeared with some tar or a dry powder to check the bleeding. As a general rule the bleeding will stop without the application of any material on the surface.

Dehorning the cattle will not only create harmony in the feed lot, but it will add to the appearance of them and they

will sell to better advantage when shipped as fat cattle. Market cattle with horns will not sell as well as those without horns.

A Visit to the National Swine Show

HUGH FERGUS.

Without a doubt the greatest exhibition of pure-bred swine ever given was held in Omaha, Nebraska, from Oct. 2 to 7. The big barns where the First National Swine Show was staged presented a busy scene throughout the entire week. The attendance was exceedingly good and for the most part made up of genuine stockmen and their families, people who came to learn and who have learned a whole lot of things that will be of great value to them. The completeness of the show, its order and its finished detail stood out as a mark of the work which those in charge had completed.

In an address of welcome to the swine breeders of the country, in which he complimented them on the vast array of the choicest stock of America, Governor Morehead, of Nebraska, officially opened the National Swine Show on the afternoon of October 2nd. President W. M. McFadden, of the National Swine Growers' Association, responded on behalf of the breeders of the country, and thanked the Governor for his welcome.

Six breeds took part in the show, namely, Duroc Jersey, Hampshire, Poland China, Chester White, Berkshire and Spotted Poland China. There were three additional view herds on exhibition, consisting of Tamworths, Yorkshires and Mulefoots, which did not enter into the competition.

When the show opened on the afternoon of Oct. 2nd all the hogs had not arrived, and the judging was postponed until the next day.

Long before 9 o'clock on the morning of Oct. 3rd exhibitors were busy putting their herds in shape for the judges, and the crowd to come later.

The judging was started with the Poland Chinas and Duroc Jerseys. Charles A. Marker, of Auburn, Ill., judged the Poland Chinas, and Prof. Herbert W. Mumford, of Urbana, Ill., judged the Duroc Jerseys. Mr. Marker handled his classes exceedingly well and finished the bulk of his judging the first day. Prof. Mumford, without a doubt, had the stiffest proposition of any judge at the show. Every class was exceedingly large and the competition was keen. Never before in the history of any live stock show has there been exhibited a more uniform bunch of Duroc Jersey hogs. It was a ticklish proposition for the judge of this breed, but we are safe in saying that there is no one who could have done a better job than Prof. Mumford. The Berkshires were judged by Wyman N. Lovejoy, Roscoe, Ill., who certainly knows how to pick good Berkshires. The competition was very close in the Berkshire classes, but the classes were small compared to the other breeds. The Chester Whites were judged by William A. Hoover, Oskaloosa, Ia., an old follower of the breed, who is willing to admit he never judged Chester Whites when the competition was any closer. A. L. Goodenough judged the Hampshires, which was no easy task, as they outnumbered any other breed at the show. There were only two exhibitors of Spotted Poland Chinas, and Thomas Vinde, of Indianapolis, had a comparatively easy time of it placing the classes. After the judging was completed a census was taken of the hogs at the show and the figures are as follows: Hampshires, 355; Duroc Jerseys, 350; Chester Whites, 244; Poland Chinas, 211; Berkshires, 162; Spotted Poland

The Farm Liniment

Winter is the critical period for horses, cattle, sheep, hogs, chickens, in fact all the living assets of the farm.

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Wanted Men with Automobiles in farming localities for a few hours daily.

Address
Maxford Company, 1524 Chestnut St., Philadelphia, Pa.

Chinas, 33; Tamworths, 20; Yorkshires, 17; Mulefoots, 17; a grand total of 1409 hogs on exhibition.

The show, in the opinion of well informed breeders, demonstrated that there is a great difference between pure-breds and grade hogs, and that wonderful progress has been made in the development of the highest type of pure-bred stock. Hundreds of farmers who have been breeding hogs for the market, and of good average quality, have gone home from the show with vastly broader ideas as to what real quality means. Their grades will never look as good to them again, and such men sooner or later will invest in pure-bred stock.

It has been a lesson to the breeder of pure-bred stock. Hundreds of small breeders who are not exhibitors left this show with higher ideals and will strive for something better in their own herds. Having seen the grand champions of all the state fairs, East and West, bunched together in one barn, they have learned a whole lot as to what is required to make a national prize winner.

The show has also taught the big breeders what other states are doing. In the corn belt there is a feeling that hogs of the best type can be grown only in the Middle West where corn is king. The old settled farming and stock growing sections of the East have shown the West that while they produce quantity the East is a place to find quality. Both sections learned a lot about each other and from each other, and the meeting in friendly competition has a broadening influence of benefit to both.

Pennsylvania.

First Aid in the Dairy Cow Stable

IDA E. BLOYE.

During the winter most farmers, and especially the dairymen, have more trouble on account of sickness among their stock than during the summer. This is due largely to lack of exercise, poor ventilation and so much dry feed. Living quite a distance from a village, as many farmers do, and without a 'phone (for all do not have a telephone, even in these days of modern conveniences) it is often difficult to get a veterinarian in time to do any good. Unless the village is a large one, a veterinarian is not likely to be there, so that it is impossible to get one at all. Many a cow and horse has been lost when a few first aid remedies, given when the animal was first taken sick, would have saved its life. We have found it pays to keep some remedies on hand, that the money spent for them is not wasted, but instead has saved us hundreds of dollars. The owner of stock should first spend a few dollars for a good veterinary book. He will find, as we have, that it is a good investment. Such a book gives all the information needed in regard to the medical care of stock, kind of medicine to give, the amount and how to prepare and give it.

We have a sort of cupboard in the cow stable where we keep the needed remedies and appliances, among which are two or three long-necked bottles for giving medicine in a drench, some teaspoons, tablespoons and earthen cups. Crude carbolic acid, hydrogen peroxide, tincture of iron and tincture of iodine, to be used in case of cuts or bruises as disinfectants, antiseptics and to stop hemorrhage; the iodine to reduce swelling and enlargements, should also be in it and properly labeled.

As cattle are frequently getting choked, a half-inch hose about 8 feet long should be in every stable, for it will remove any foreign substance from the throat. A large and small syringe will often be needed when doctoring

stock, to wash out cuts and sores and for injections, and should be kept with the other articles. A measuring glass, some strong white cloth for bandages, castile soap, sponge, and a wash basin should also be kept on hand.

Constipation, indigestion and colic are the most common ailments of stock. For the former raw linseed oil, castor oil and Epsom or Rochelle salts should always be kept on hand. For the latter give ginger, soda, charcoal and niter, a tablespoonful of each in about a pint of milk or water; give as a drench at intervals until cured.

Quinine is a very useful remedy for the dairyman to use in pneumonia and colds. One dram of the sulphate of quinine is the right dose. Mix it with a sufficient amount of linseed meal and wet up with water into a ball and give about three hours apart until the fever subsides. Aconite is also good to reduce fever. The dairyman should never be without saltpetre, copperas, alum, tar, sulphur, gentian, turpentine and a good liniment, as he will often need them, as well as those above. Include also a reliable worm medicine. We find poplar bark a splendid one. Cut the green limbs into 2-foot lengths and put into the manglers for the stock to eat the bark. A strong sling, made after some plan given in the veterinary books and always kept ready for use, will save time and patience when an accident or sickness occurs among the stock.

Dr. Irl D. Wilson, of the department of animal husbandry at the Pennsylvania State College, when recently speaking of the advantages of a first aid closet, said: "A dry dusting powder for the treatment of wounds is one of the most important articles for such a chest. A very good powder is composed of equal parts, by weight, of powdered boric acid, wood charcoal and dried alum. This powder dusted on an open wound twice daily acts as an antiseptic, keeps the wound dry and promotes healing. It is as effective as any powder on the market."

These preparations will not entirely do away with a veterinarian, but will in many cases save the expense of calling him, and in a bad case possibly save the life of a valuable animal until he arrives.

New York.

The National Conference on Marketing and Farm Credits

The fourth annual Marketing and Farm Credits Conference will be held in Chicago, December 4-9, at the Hotel Sherman. This organization has been working for three years along various lines to advance the agricultural conditions of this country. At the meeting this year the workings of the new Federal Farm Loan Act will be fully discussed, and, if possible, suggestions will be offered to make the law more workable. The marketing section will devote itself to a study of methods of checking waste in the handling of live stock, whole milk, grain and perishable crops. Last year forty-six states and a number of Canadian provinces were represented in the conference. Farm leaders from all the states and Canada have been invited to attend this year, and it is hoped that considerable constructive thought will be developed.

Three Pertinent Dairy Suggestions

A. G. MORRELL.

It is both humane and profitable to keep your dairy cows from being crippled up with rheumatism, which is generally caused in the bovine species by drafty barns or damp, cold floors.

While on the surface the "crack sys-

tem" of ventilation may seem to be economical, in the final analysis it is the most expensive; and tight doors and walls, windows with all the panes in and fitting so that the cold wind does not sift in all around them, may save one or two or three cows from rheumatism, or caked udder or even pneumonia this winter.

If you are putting in new floors this fall, or building a new barn, there is time to make provision for preventing rheumatism in the cows' legs, or cold in the bags, often followed by garget. The cold and damp strike up through the concrete, and also through the bedding, before the cow has had time to warm her stall floor with her body. If she is lying down, her udder stands a good chance of getting chilled, especially if she is fresh, or she will often develop rheumatism in a remarkably short time, and possibly be badly lamed. Certainly she will suffer; and an uncomfortable cow makes less milk than one in normal condition.

To cut off the cold or damp, or both, when laying the floors of the cow stalls, have the first three inches of concrete laid smoothly; cover it, the full width and length of the stall, with a good quality of roofing paper; next cover this paper with a coating of hot tar or pitch, then put on another layer of the roofing paper and coat it with the tar or pitch; then put on a third layer of roofing paper, on top of which have three inches of concrete, with a rough finish, so as to give the cows a purchase for their feet. If saving concrete is an object, when finishing use one inch, reinforce with nails and top off with one inch of concrete. The tarred paper and the pitch act as a cut-off for cold and damp, and the cow can warm the floor of her stall very quickly by her body heat when this process is used. She herself keeps warmer, and has more carbohydrates left to use in her milk production than if she had to take a lot of her own heat to warm, or try to warm, a floor which is constantly being chilled by rising dampness or cold from the earth underneath. Roofing paper and pitch are cheaper than grain; and if your cow has to use an undue portion of her feed to warm a cold body and a colder floor, she has just that much less for milk making. This sort of floor is also fine for a piggery, only the last layer of concrete need be only one and one-half inches. The pigs warm it readily and save that very expensive feed, corn.

Besides being a most disgusting and insanitary practice, wet milking is dangerous to the udders. In two large herds, one in New York State and one in Pennsylvania, there lately developed a number of cases of boils on the udders, and cowpox. The feed was carefully investigated to see if too much heavy or heat-producing grain was being given, but it was decided that this was not the case in either herd, and the herdsmen began to watch the milkers. In each herd it was found that those cows affected were milked by men who were "wet milkers." Both dairies being producers of high-class products, this was strictly against the rules, so the men were immediately dismissed. Those cows which were troubled were doctored, milked with dry hands, the milkers washing their hands in an antiseptic solution between milkings, and the boils and cowpox both disappeared. The latter may cause the loss of a quarter, or even the whole bag, if not cured promptly, and as all dairymen know, spreads through a whole herd very often. In this, as in so many other situations, an ounce of prevention—stopping wet milking—is better than a ton of cure.



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CATTLE.

"Meridale Facts"

is the title of a leaflet presenting some results of seven consecutive years of Register of Merit work at Meridale Farms. It shows how the average production of Meridale Jerseys has advanced from 6959 lbs. milk, 444 lbs. butter per cow in 1910, to 7822 lbs. milk, 520 lbs. butter per cow in 1916, and gives other reasons for confidence in the quality of superior stock offered from the herd. A copy will gladly be mailed to any one interested in dairying. Address: A. YER & McKINNEY, 300 Chestnut Street, Philadelphia, Pa.

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Butchering Tools

The time of year is approaching when butchering will be in progress on nearly every Eastern farm. Time has gone when the local slaughtering of steers is a factor in the community meat supply, but the annual hog killing still remains an occasion for neighborhood co-operation, and one of the best ways to reduce the "high cost of living."

Ease and economy in butchering on the farm depend a good deal upon the tools used. The most important tool of all, in the opinion of the Ohio State University, is a 5 or 6-inch skinning knife. The curved blade cuts more easily than an ordinary butcher knife and is especially handy when killing cattle.

A 10-inch steak knife and a narrow, 6-inch boning knife will be found very convenient though not as necessary as the skinning knife. A bell-shaped hog scraper costs about 20 cents and will prove invaluable in cleaning the hog. A 22-inch saw is long enough and when used with an 8 or 5-inch cleaver will split even a beef carcass very easily.

Two iron kettles with a capacity of 20 gallons each, a combination lard press and sausage stuffer, meat grinder and sharpening steel will also be needed. An old singletree may be used for a hog gambrel and a 4-foot oak beam for a beef tree. These with a block and tackle, barrel and ax will make a very cheap and efficient set of butchering tools.

International Live Stock Exposition, December 2nd to 9th

Interest in the International Live Stock Exposition to be held in Chicago, December 2nd to 9th, continues to increase. This is the annual meeting place for the best beef cattle, sheep, horses and swine that breeders have been able to produce. Visitors to the show often speak of their trip as a "short course in animal husbandry," so great are the lessons to be learned regarding all phases of the live stock industry. The catalogue recognizes twelve breeds of sheep, eight of horses, eight of swine and six of cattle.

A new feature this year is a boys' live stock feeding contest for which \$750 is offered in premiums. This is for entries, made by boys under 17, of stock which they have fed. The usual educational features of the show will be greatly enlarged this year and a vast amount of helpful information will be presented in new and original forms.

The students' stock judging contests which have come to be regarded, in the agricultural colleges, as one of the leading events of the year, will be held as usual.

The aim of the whole exposition, which does not exist for financial gain, is to encourage the production of more and better live stock and we urge as many of our readers who can do so, to attend it.

Utilizing the Farm-Grown Feeds

All grains will be high during the coming winter. Many farmers, on the other hand, are confronted with the problem of marketing in the most practical manner the hay, corn fodder, and other rough feed produced in such abundance during the past season. Large barns are filled to full capacity and in many localities farmers have been forced to stack part of the crop outside.

Dr. H. H. Havner, in charge of animal husbandry extension at the Pennsylvania State College, advises farmers who do not have enough live stock to consume hay and forage crops produced by them to buy good grades of beef stockers with the idea of carrying them

through the winter on rough feed and a limited grain ration. Those who possess silos should feed liberally of silage, adding cotton seed meal and possibly some corn. Steers fed in this manner may be marketed in the spring.

If one lacks a silo the most economical method is to finish the steers on grass in the spring. As soon as they are turned on pasture the steers should be given a liberal amount of corn and cotton seed meal at the rate of 2½ pounds per 1000 pounds live weight daily. Steers finished on pasture may be marketed about July 1st.

Raising the Calf

J. B. FITCH.

If the calf must be taken early from its mother, take it at birth, as teaching it to drink from the pail will then be made easier. The calf should by all means have the whole milk for the first week. The milk may be fed in two feeds—night and morning—but better results are obtained by feeding three times a day.

The time to change the calf from whole milk to skim milk depends upon the development of the calf. If it is healthy it may be changed to skim milk at the end of the second week, but the third week would be better. This change must be made gradually by putting a small quantity of skim milk into each feeding. About a week or ten days is required. In this way the calf learns to like the skim milk without noticing the change.

The right temperature for the milk is 100 degrees. It should be fed at as nearly this temperature as possible. Feeding cold milk at one meal and warm milk at another upsets the digestive system of the young calf.

It is also important to feed the milk sweet. A single feed of sour milk might cause serious trouble for the young calf. Better let it miss a feed, or even two, than give it sour milk. The pails out of which it is fed must be kept clean and sterile.

If one has an abundance of skim milk it is well to feed the calf six or eight months. When the calf is changed from whole milk to skim milk, it will begin to eat grain. Place a little grain in its mouth after each feeding of milk. It will soon learn to eat the grain without assistance. The grain should not be fed with the milk. The calf should be allowed to masticate the grain.

Half a pound of grain a day is usually sufficient for the first two months. From this time until the calf is six months old a pound a day will be enough. Corn meal has given the best results to supplement skim milk.

Clean, bright hay within reach will encourage the calf to consume a small amount of it. Plenty of fresh water should also be provided for the calf at all times.

Kansas.

Sows Should be Bred Now

This is the season for the breeding of hogs selected in many sections. There are many advantages in breeding sows for early farrowing. Pigs farrowed in February or early March come at a season when farmers can give them better care. By the time forage crops become available, the pigs are of such size as to make best use of them, and thus to attain greater size for early fall market.

Hogs are usually highest in price during September. Early-farrowed pigs attain marketable size by that time. Late-farrowed pigs do not reach market weight until December or January, when pork prices are lowest.

The gestation period of sows is 114

days. If pigs are to be born the first of March, therefore, the sows must be bred by November 10. To raise large litters, sows must be well fed and in a thriving condition at breeding time. Feeds for this purpose require considerable muscle and bone-building material. The Pennsylvania State College school of agriculture and experiment station recommends a ration composed of corn, 4 parts, middlings, 2 parts, and oil meal, one part or tankage three-fourths part.

The British Islands, whose area is equal, approximately, to only two-fifths of the area of the State of Texas, produced in 1915 approximately 120,000,000 pounds of wool, whilst the total production of the entire United States was, approximately, 238,000,000 pounds of wool, and, moreover, figuring on the usual basis of scoured production the amount produced of clean wool in the United Kingdom is practically equivalent to the amount of clean wool produced in the United States.

Queries Answered

Mare with Pin Worms.—J. G. E., Delaware, writes: "I have a mare run down and is full of pin worms. Please give me advice as to what will eliminate them."

To remove the pin worms, make a decoction of quassia chips by putting 2 ozs. of the chips in a pot and adding 2 gallons of water, then heat on a stove until it commences to boil, then move back on stove and allow it to simmer for 3 hours; then strain and add sufficient water to make 2 gallons. Heat this to about 100 degrees Fahr. and inject into the rectum. If necessary, repeat treatment in about 2 weeks. If she has larger worms, mix 3 ozs. each of sulphate of copper, sulphate of iron and tartar emetic, make into 24 powders and give her a powder night and morning. Follow the last powder by a purgative of 8 drams aloes and 8 drams ginger. I.

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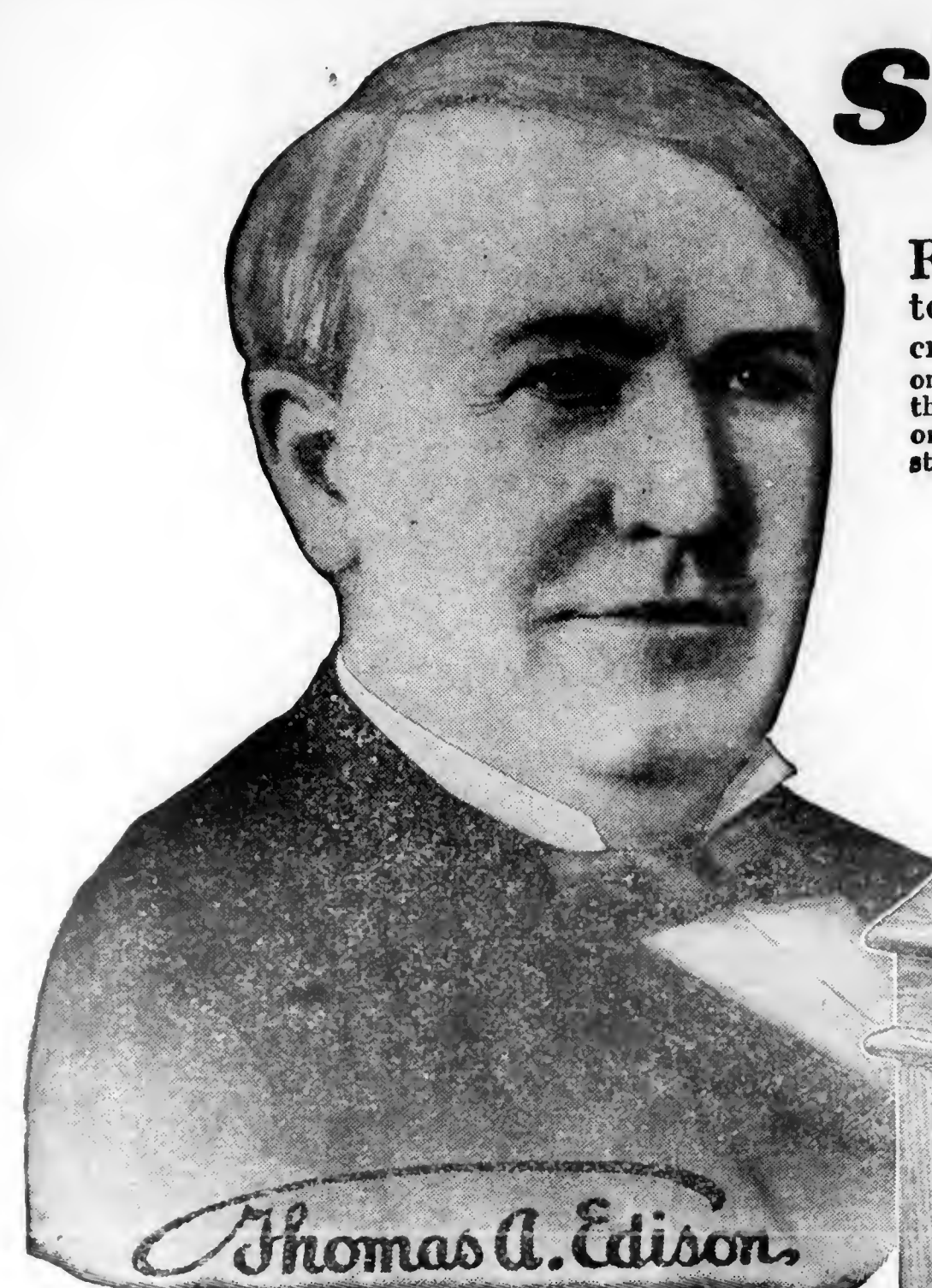
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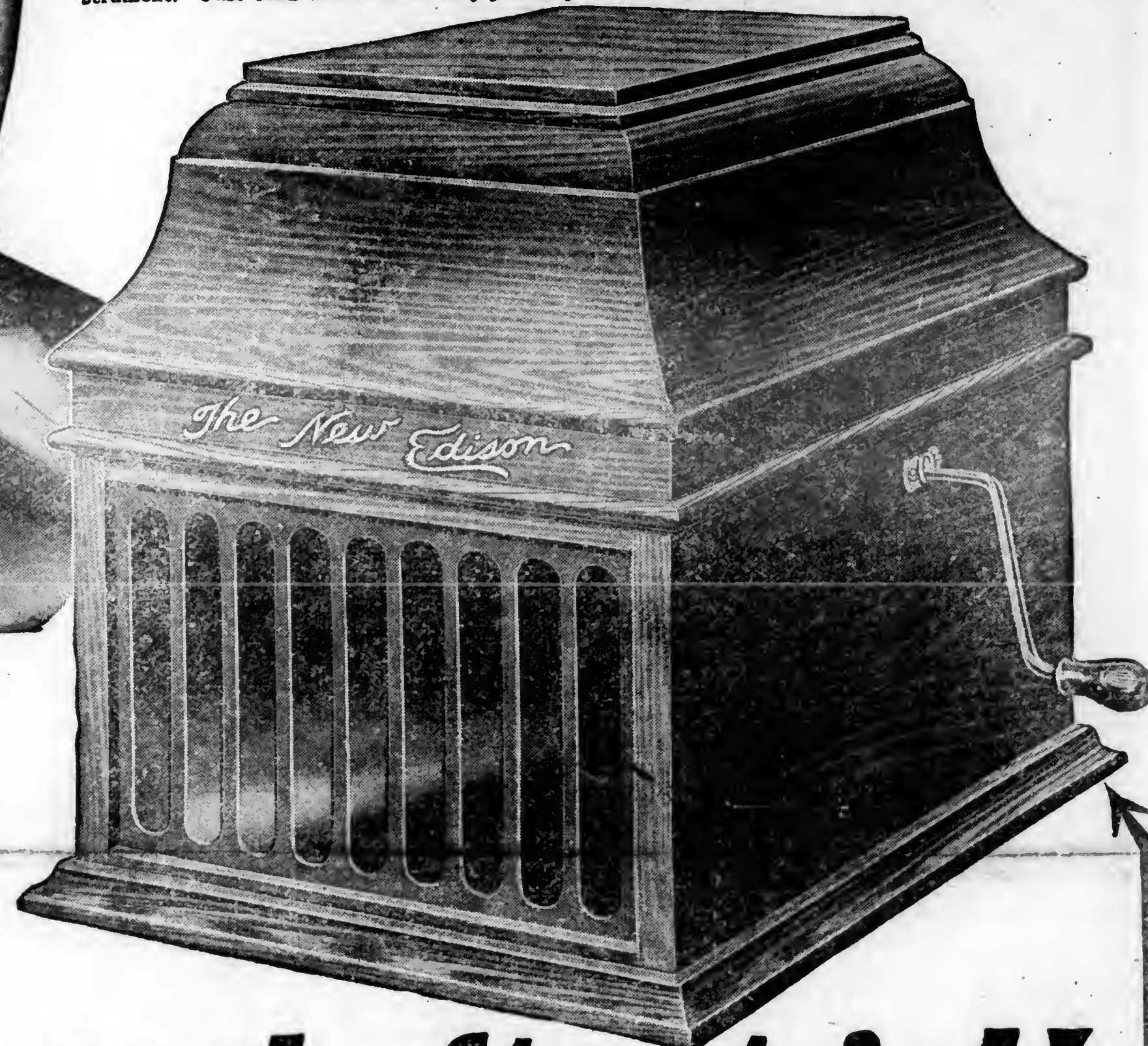
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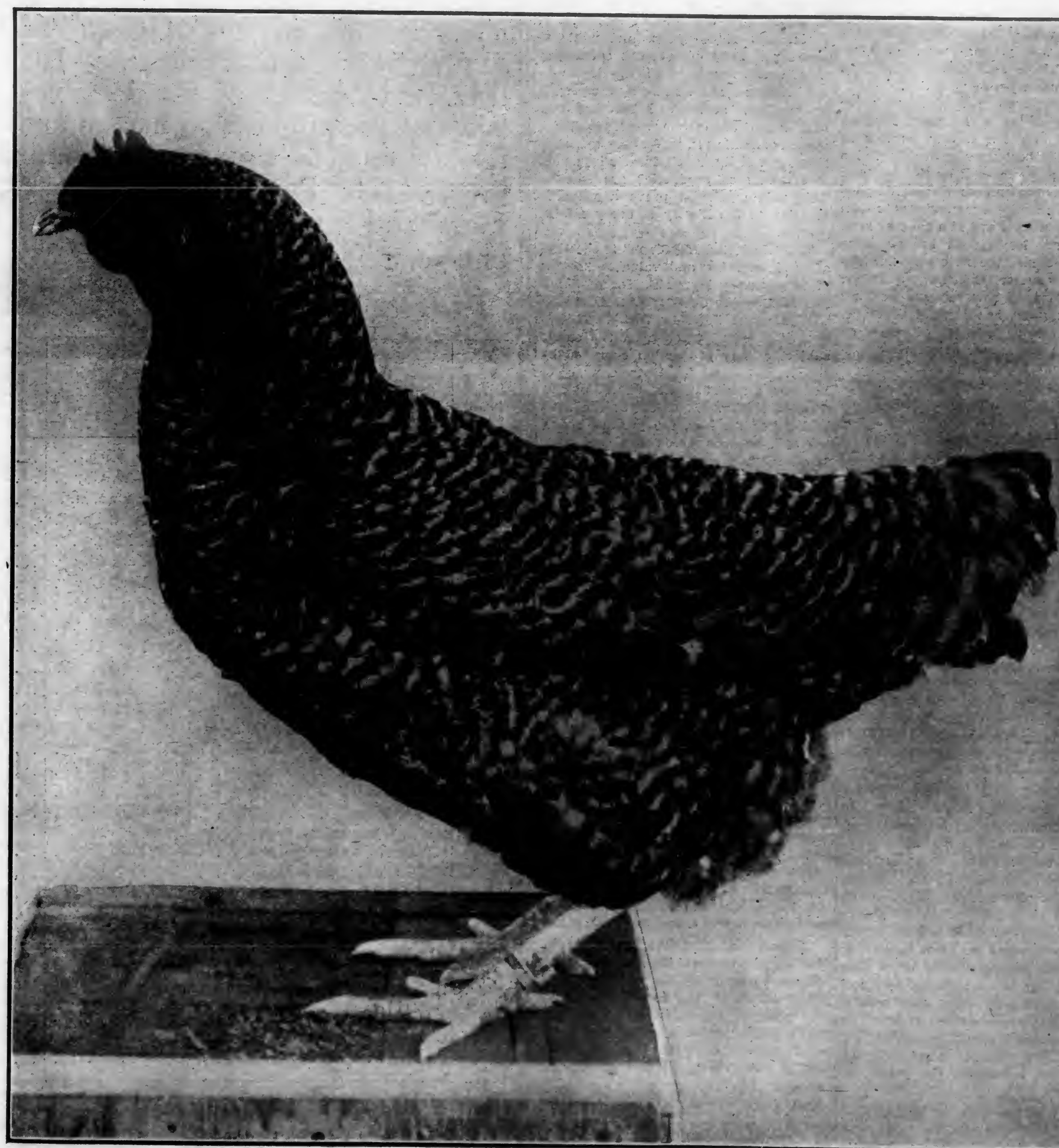
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The Farm on a Business Basis

P. C. HENRY.

Farming is subject to the same rules as other business, good management spelling success, and the opposite failure. I sometimes think it would be a very good policy for every boy who is going to spend his life farming to spend a year or two in a business house, in order to be drilled in the business rules of that establishment. A young man would make more money in after years for having had such an experience. However, living a short time in the city while very young might draw his mind entirely away from farm life, having become infatuated with the gay and false life of a large city.

A business man in the city has a plant and equipment with which he can turn out a certain article at the lowest possible cost. The farmer's plant and equipment is his soil. Every thinking farmer is thoroughly convinced that the richer and more dependable his soil, the cheaper will be able to produce the various farm products. One acre of rich, dependable soil will produce more products with much less work and expense than two or three acres of poor soil.

The first move of a business man (or in this case of a business farmer) should be to get a certain number of acres in the best state of fertility. He should improve his soil by the best and most economical means within his power. When a business man wishes to turn out more products and at a cheaper rate, he does not hesitate to borrow, more capital to secure the necessary machinery, or raw materials in large quantity.

Many farmers, however, are working under the great handicap of unfertile, undrained soil because of fear or timidity in the matter of securing sufficient capital with which to place their plant and equipment in order.

The use of poor tools or insufficient power may reduce the profits from a fertile acre 25 to 50 per cent. It costs no more for the man who handles the plow turning three or four acres per day than for him who turns only one acre a day on account of poor plow or insufficient power.

Whenever the conditions are such that winter plowing can be done, the business farmer will certainly take advantage of it. For a given team will accomplish during winter twice the amount it will in the spring, if the ground is hard and dry. And the action of the frost on the winter plowed land will do more toward making a perfect seedbed than will several harrowings on spring or summer broken land.

The business man aims to sell the finished product, for he realizes that there is the most profit in it. In a nearby handle factory, do you think the business man would be foolish enough to ship the handles in a rough state and expect each purchaser to take sand paper and finish them? So the business farmer should aim to sell only the finished product, for therein lies his greatest profit with the least damage or exhaustion to his plant—the soil. A ton of hay or grain sold from the farm is a much greater drain on the soil resources than when that hay or grain is fed to cattle and the cattle sold. The most careful business farmer will strive in every way to condense the products before placing them on the market, thus reducing the tonnage and increasing the price per pound.

Every business man seeks to eliminate every item of waste. In the handle factory referred to, the waste hickory wood was sold to the residents of the town at one dollar per load. But after some study the proprietor saw he could utilize

ize that item of waste to much greater advantage. He made commercial chicken coops from the wood and thus received four times more for the waste material than he formerly did. The business farmer will also look about him for items of waste and will seek to eliminate all waste from his plant. The writer recently saw a farm where there were many items of waste. The picture of how the manure was wasted stands in bold relief in his memory. The manure was thrown out under the eaves where the hogs rooted it about, the chickens scattered it far and wide, and the rain from the roof took away what fertility was left. And the pity of it was, that very farm needed the decaying vegetable matter, as the acres seemed dead and lifeless, having very little, if any, humus whatever in the soil.

Bulletin Helps for Farmers

One of the most exhaustive treatises on alfalfa which has come to our notice is the report of the Kansas State Board of Agriculture on "Alfalfa in Kansas." It consists of 484 pages and while it treats primarily of Western conditions there is a great deal in it applicable to the Eastern farmer. Not only the proper preparation, seeding, harvesting and handling of the crop are discussed, but diseases affecting it, its feeding value for all classes of live stock, insects injurious to it and seed production are treated. This volume should prove a valuable addition to the library of every alfalfa grower.

"The Neglected Hay Crop" is the title of an interesting and valuable booklet of 64 pages, by Myron S. Hazen, which is issued by the Coe-Mortimer Company (51 Chambers St., New York). This is a very excellent treatise on the entire subject of hay production compiled by the author and the late George C. Leavens, an agricultural expert of recognized ability. It discusses the soils best suited for hay, the preparation of the soil, seeding, seeds and seed mixtures, sowing, liming and fertilization, harvesting, care of the mowings and marketing the crop. It is fully illustrated in a very attractive manner and is well worth reading and preserving for reference. We have arranged that any of our readers may secure a copy of this book by writing to the address above mentioned and mentioning this paper. It is certainly a fact that many of our farmers are not producing the hay they ought to and the publication here reviewed is calculated to set one thinking along the right lines.

The scoring and judging of dairy cows is rapidly becoming a matter of importance to the boys and girls and it is in their interest that the United States Department of Agriculture has issued a 20-page bulletin on this subject. It is profusely illustrated with diagrams and photographs and amply fulfills its purpose of teaching how to judge dairy cows by the use of the score card. We would suggest that anybody interested in cows ask the department at Washington to send them a free copy of Bulletin 434.

"Commercial Handling, Grading and Marketing Potatoes" is the title of a 40-page Farmers' Bulletin (No. 753) recently issued by the United States Department of Agriculture, Washington, D. C. Information of value to every potato grower is in this bulletin, which will be sent free to all who ask the department for it.

Our readers who are interested in the cost of growing peaches would do well to ask Delaware State College, Newark, Del., to send them a copy of Bulletin 113, by Prof. C. A. McCue, "Financial Statement of the Experiment Peach Orchard."

Money Saving Opportunities

We have made up a list of magazines and newspapers, which we offer in combination with The Practical Farmer at a reduced price for the two publications. We believe they are the best that can be selected for the farmer and his family. We cannot send sample copies of any of these publications; they must be secured from the office of each. These offers are only good for subscriptions in the United States, Hawaii and the Philippine Islands. The first column of figures gives the price of the publication named and the far column of figures the combined price of The Practical Farmer for three years and the publication named for one year.

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Dollar Eggs and the Farmer's Opportunity

By F. V. L. TURNER

ON November 1st eggs sold at 65 cents per dozen in New York City, an unprecedented figure for that time of the year, and it is freely predicted that a dollar per dozen will be the price in metropolitan markets soon—in fact, cases are on record where producers of high-class eggs have contracted this year for regular winter shipments to consumers at the rate of one dollar per dozen. Such prices mean for the farmer profits several times in excess of cost of production, and the farmer, the tiller of the soil, the man with the hoe, if you like, is going to get the bulk of these egg profits from now until spring. For the farmer is the producer of over three-quarters of all the eggs sold annually in these United States.

Now the production of eggs is an item of considerable importance on every farm raising poultry. Poultry production under conditions considered anything but good or favorable to profitable output shows an appreciable percentage of the farm's total income, and this is true of farms of from fifty to one hundred acres, with flocks of from 100 to 200 hens. It is safe to say that these farm flocks, though not laying any other than spring

eggs, costing not over 15 cents per dozen to produce, selling rarely at an average less than 20 cents per dozen, give 33.3 per cent. profit above the value of that part of the flock sold as meat each fall.

As a rule the farm flock is as nearly a perpetual motion machine as has been discovered. Reared at the will of the setting hen, with little labor from its owner, little, if any, food but that supplied by nature (and found by the mother hen), the average farm flock represents little money investment, either originally or each year, its reproduction and size being maintained by natural processes, the farmer collecting

that eggs are laid, selling off a few spring cockerels and a few hens in the fall. Each winter some of the flock is carried off by disease, due in many cases to lack of protection, the same lack of protection preventing egg laying in the cold months.

It is the farmer's duty to himself, his family and as farm investment to get his share of the profits from high priced eggs, to take advantage of natural opportunities. Right now some little thing properly done will go far toward putting the egg getter into possession of these dollars-for-dozens of eggs. Satisfied with past profits, reckoning with increased grain prices and letting well enough alone, does not mean additional income—it actually spells loss of profit, because all necessities have undergone great advance and will undergo further ones.

To increase the cost of production without return poor business; to increase production at all, with the rate of profit so far in advance of cost of production, means the difference between 20-cent eggs and dollar eggs. Perhaps some little care, and very little labor, applied to the cracks around the roost places,

would better the condition of the layers and prevent deaths—in all likelihood a warm moist mash in the morning, an open hopper of dry mash all the time and a liberal feeding of whole wheat, cracked corn and oats at night, would double the egg output from those hens that should lay, while maybe the pullets need more than the barnyard affords.

Fear of overproduction is a bugaboo; there never has been a glut in the egg market, the spring chicken market or in the poultry market in general, sufficient to cause actual loss. At the moment there is no need to reckon with increased cost of grains; with wheat \$2.00 a bushel there is still ample profit in hens that lay 8 to 10 dozen eggs a year even where all feed is purchased and when eggs sell at 30 cents per dozen. As a matter of fact, present grain prices are not over 12 to 20 per cent. higher than two years ago, whereas egg and poultry meat prices have advanced at a greater rate and dollar eggs have practically arrived.

Of course, only a few select egg producers will get

er's family, with little cost and labor. Shed-roof houses, 4 feet 6 inches in height at the rear wall (stud, sill and plate), 8 feet high in front, 16 feet deep, with 18-foot long rafters, any length of house desired, will, with ordinary rations, keep the pullets laying to their best ability. Figuring 4 square feet of floor space to each layer, a house 20 feet long of the above depth, 16 feet, would give enough space for 40 to 50 hens. Houses of this size, home-labor built, with all hardware, should not cost over \$30 to \$40, paper roof included. This house should last at least ten years, making the yearly cost for housing 50 hens \$6, including interest.

Replace the setting hen with an incubator, next spring, and immediately the farmer manufactures a flock of females that will, with a little extra care, begin laying the latter part of October or early November. A brooder will supply the extra care, with one or two visits from the wife, daughter or son every twenty-four hours, or the time necessary to put a small shovelful of coal in the brooder stove, fill a pail with water and scatter a little chick grain. This

sounds quite easy—it is; just as easy as it reads and therein lies the wonder of the farmer's failure to take advantage of so much in opportunity at so little cost in money and labor.

Then again comes the eternal question, "Shall I raise mongrels or pure-breds?" Pure-breds, of course, and from known laying strains. The mongrels may be big chickens, full of meat, that bring good market prices, but nature says there shall be more poor layers among the mongrel flock than in the pure-bred flocks, since more eggs is the objective the better layers will be the better payers. To convert the mongrel flock into pure-breds

is easy of accomplishment at small cost—breeders, of good quality, are liberally offered to purchasers every fall at a nominal price per fowl. The first year's increase will entirely replace the mongrel flock in the following fall, the money from the sale of meat hens repaying the purchase price of the pure-breds many times over. Herein lies the straight road to dollar-a-dozen eggs as nearly as it can be traveled by the average farmer.

So far as the feeding of poultry for heavy egg production is concerned there is a wide difference of opinion, not as to whether the ration shall consist of certain food ingredients so much as how and when the ration shall be fed.

Corn meal, middlings and bran, in the proportion of two pounds of bran to one each of corn meal and middlings, 10 per cent. by weight of the whole of this mixture in beef scrap (practically 6 1/2 ounces to 4 pounds of the mixture) is the proper balance for eggs, when equal parts of cracked corn and whole wheat, with half the quantity of either in oats (one

(Concluded on page 443)



1305 Eggs in a Year. These Five Leghorns Averaged 261 Eggs Each in The North American Egg Laying Contest

one dollar per dozen for their output; that from 60 to 90 cents will be about the range in egg prices this winter in New York, Boston, Buffalo, Pittsburgh and Philadelphia, there is little doubt; other centers of population will probably pay as much and the general price of fresh eggs will hang on an average of 70 cents for November, December and part of January.

There is no apparent prospect of a reduction in prices of eggs and poultry meat for some years to come. Reliable reports from foreign countries indicate that the demand for poultry products, after peace is established, will keep American producers busy for many years, American consumption at the same time increasing in volume, while prices are maintained at their present level or increased, as conditions warrant. Improved methods applied to the poultry industry as now practiced on the average farm will increase profits out of all proportion to the present rate.

The modern house, sheltering pullets hatched at such a time that they will mature for egg laying at the beginning of November, will put an entirely different enterprise for profit in the hands of the farm-

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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

Handling Manure in the Winter

There has been much discussion in the agricultural press from time to time concerning the best way to handle manure on the farm in the winter. It is quite evident that manure is becoming one of the most valuable products for the land, since nothing will take the place of animal manure in restoring the productivity of thin soil. Further, it seems clear that the care exercised by the farmer will be determined largely by his estimate of the value of the manure. It is quite true that some farmers underestimate the fertilizing value of this by-product of the farm. As a result the manure does not receive the attention it should during the period when it accumulates most rapidly.

The first thing to be kept in mind regarding manure is that a considerable portion of the plant food it contains is soluble in water. That is, if it is exposed to rain a goodly percentage of the fertilizing value is leached away. The brownish water that runs from the barnyard or manure pile after a heavy rain is evidence of this. The effort to keep the manure in the dry involves an outlay in sheds or buildings for protection. Even this does not wholly protect the manure, since if it is moved from the stall and loosely piled more or less fermentation will take place. The manure becomes "fire-fanged" and a considerable portion of the nitrogen may be lost. The only way to prevent this change in the manure is to keep it well compacted and moist enough to prevent heating. Compacting the manure drives out a large portion of the air from the mass, and wetting keeps down the temperature. Under ordinary conditions, if the liquid portion of the manure can be retained it will furnish enough moisture to keep down fermentation. In cold weather the most effective method of keeping manure is to let it accumulate in the stall and as it is thoroughly compacted under the hoofs of the animals little or no loss occurs. This applies particularly to horse manure. Cow manure has such a high percentage of water at all times that it does not ferment easily. The method of allowing the manure to accumulate in the stall does not appeal to the tidy farmer. He insists upon cleaning out the stalls daily. Now if the manure thus removed could be allowed to dry thoroughly before it is thrown into large piles there would be less chance of loss through fermentation. However, this is less practical than compacting and wetting the manure. It will be seen that these methods involve considerable labor if the stable is to be kept clean and at the same time the manure is prevented from losing some of its valuable properties.

Since manure is so subject to changes in composition in re-handling it is now the opinion of many that the best method of disposing of manure is to apply it to the land as fast as produced. This saves the expense of special buildings and of handling the manure more than once. On a grain and live stock farm this is probably the most satisfactory plan. There are some things to be considered in this method of disposing of manure. One is that it is not always possible, on account of the weather, to spread the manure during the winter. However, if the manure is applied to a sod that is to be turned for corn in the spring the

ground is firm enough at most times to allow the use of the spreader. Whenever possible the manure should be spread on a sod or on the grass which is to be cut the next summer, or used as a top-dressing for winter wheat. There is less chance for the loss of soluble plant food if the manure is applied in this manner. Where bare land, such as corn stubble, is dressed with manure in the winter there is more danger of the plant food being washed away, especially if the land is rolling. When manure is applied in the open field there is no further fermentation or loss by fire-fanging. The soluble portion is gradually carried into the soil and the crude manure changes little until it is turned under. There is little loss of the soluble portion, as it is absorbed and held by the soil. This is particularly true of the mineral portion of manure, phosphoric acid and potash.

All in all, it seems a much better plan to remove the manure to the fields as fast as it accumulates, especially if considerable stock is kept. The extra labor, the housing and care required in order to keep the manure in a prime condition after being removed from the stall adds to the expense and this is lessened by the one handling necessary in taking it directly to the field.

Another point should be kept in mind in handling manure in the winter and that is the adding of some form of phosphoric acid. Twenty-five to 40 pounds of acid phosphate or raw ground rock phosphate should be added to each ton of manure. This can be done most readily by sprinkling in the stalls two or three times a week a small quantity of these materials. The subsequent handling of the manure will enable the phosphoric acid to become thoroughly mixed with the manure. This treatment greatly enhances the value of the manure.

In winter more attention can be given to the care and handling of the manure and the results in crop yields will generously reward the management of this valuable by-product.

The Local Corn Show

The value of a neighborhood corn show is not fully appreciated. If the contest is entered upon in the proper spirit, considerable enthusiasm will be aroused, and some of the problems of the corn grower will be more clearly indicated. There is no better way of determining who has the best type of corn. If a competent, disinterested judge places the exhibits it will be seen that there is a remarkable variation in the quality of corn grown in the same neighborhood. Since the corn plant is the result of two sets of forces, heredity and environment, the influence of each will be seen, since neighboring farmers know pretty well what has been done for the adjoining fields of corn in the matter of fertilization and cultivation. At the show the quality of the crop will be noted—the result of the kind of seed and of the character of the tillage. One of the most remarkable features of such a comparison will be the variation in the quality of the ears. Late planting and poor fertilization will leave their mark in the immaturity and size of the ear or the development of the kernel. It is often claimed that a sample 10 ears of corn does not indicate the character of the yield. Nevertheless there is a close relationship between the quality of the grain and the yield per acre. An experienced judge can readily pick out the sample of corn which has come from a high yielding crop. The size of the ear is not the only index; the weight, maturity and development of the tips and butts and the depth and plumpness of the kernel also are indicative of the treatment the crop has had. At a local corn show one will see a surprisingly large number of varieties or strains of corn. The thought quickly arises that all of these types cannot be the best; there is one perhaps that is superior to all the others. A neighborhood corn variety test would probably in-

dicte the highest yielding strain to a certainty. Why should not all the corn growers in a single neighborhood grow the same variety of corn? The type of soil is the same and the type of farming is probably along the same lines. Considerable advantage would be gained by growing one variety. In the first place there would be no danger of the mixing of different colors through inter-pollination. Then seed corn might be procured from the neighbor who had the best results for the single year. If the neighborhood is in the corn belt where corn is sold in large quantities it would be easier to sell car lots of a single definite variety than small quantities of non-descript character. There is just as much reason for the farmers of a community to grow the same variety of corn as the same variety of potatoes, tomatoes or sweet corn. While the market does not insist upon a definite variety in corn as do the canners of tomatoes and sweet corn, yet a single variety would increase not only the yield in the neighborhood, but would advertise a given variety so that seed could be more readily sold.

If you have not held a local corn show, get someone, perhaps the county agent, to round up a neighborhood and plan to have a good-natured contest. It will be worth while.



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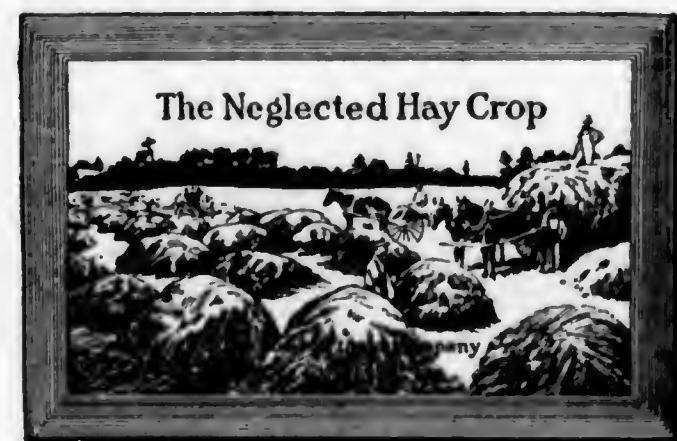
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1857 THE BUSINESS FARMERS' STANDARD FOR SIXTY YEARS 1917

and allowed to work into the soil with alternate freezings and thawings. Such a practice is being followed in many sections of Ohio. Winter liming will be almost necessary this season because of the shortage of cars for transporting lime during the seeding season. However, it can be done with good profits, it would seem. A farmer can easily lime five acres in a day and if he would secure one-half of the results as found at the experiment station he would realize from \$10 to \$15 more per acre from his wheat. In addition, the beneficial results from the winter liming would be seen for several years.

Ohio.

Use Phosphate with Manure

Since phosphorus is carried off the farm in relatively large amounts in grain crops, in the bones of animals, and in milk, soil specialists at the Ohio Experiment Station recommend the use of acid phosphate or raw phosphate rock to reinforce barnyard manure, if the fertility of the soil is to be maintained. Acid phosphate is more generally recommended, because under average conditions it is more effective and more economical than the raw rock.

Acid phosphate has returned more than three times its cost in crop yields in many tests at the experiment station, even when used in connection with manure. It is ordinarily used at the rate of 40 pounds per ton of manure. The phosphate may be spread over the manure in the shed or yard or mixed with it at the time of hauling. It may also be sprinkled over the stable floor behind the animals, about one pound being used daily per 1000 pounds live weight of the animal. In the latter case it also acts as an absorbent of the liquid manure.

Results of Lime on Wheat

C. M. BAKER.

Results recently published by the Ohio Agricultural Experiment Station show that lime had increased the amount of wheat in 1916 harvested on plats, from 10.59 bushels to 21.8 bushels per acre, or an increase of 106 per cent. The yield had been more than doubled. This was done on unfertilized land and the increase can be attributed to lime alone.

Where acid phosphate was applied to the land at the rate of 160 pounds to the acre with lime, 27.92 bushels were grown per acre; where the phosphate was used without lime only 16.67 bushels per acre were raised, making an increase of 11.25 bushels, or 67 per cent, more where lime had been applied.

On another plat where nitrate of soda was applied at the rate of 80 pounds per acre, acid phosphate 320 pounds, potash 100 pounds, lime 160 pounds produced an increase of 19.58 bushels per acre; the unfertilized plats treated with the above fertilizer alone grew only 17.17 bushels, and the lime 36.75 bushels, an increase of 114 per cent. At the present price of wheat the increase in money value by lime alone would amount to \$27.50 per acre.

On making his conclusions Director Thorne of the station says: "Where the land needs lime nothing but lime will satisfy that need and neither fertilizers nor manure will bring the land up to its maximum capacity without the aid of lime. In no case has manure nor any combination of fertilizers been able to produce a full yield of wheat without the help of lime."

Furthermore, the influence of the lime will be also seen on succeeding crops for three or four years, especially on clover or alfalfa. Results at the experiment station show an average gain per acre for lime land of 1,342 pounds of clover hay for 11 years and an average gain per acre for timothy hay of 1,481 pounds for 7 years.

Considering the above results, and with wheat at \$1.50 per bushel, farmers who have not succeeded in liming their wheat ground this fall will undoubtedly begin winter liming. Even where wheat has been sown and fertilized heavy winter liming is being practiced. After the wheat is sown and when the ground is not soft the lime is drilled on the ground

Fertilizer for Potatoes.—G. B. C. Nevada, writes: "What would be the best and cheapest fertilizer for potatoes? Our ground is a sandy loam. What do they use in the East? At what place could I get the fertilizer? How many pounds would it take per acre?"

In the first place, successful potato growers in the East use from 800 to 1500 pounds of fertilizer analyzing 4% nitrogen, 8% phosphoric acid and 6 to 10% potash. Before war times this mixture cost nearly \$30 per ton; now it is not obtainable on account of the shortage of potash. There is no cheap fertilizer for potatoes. What is ordinarily applied is one of the most expensive used on crops. You probably can find out from your state experiment station where fertilizers can be procured near by.

In Steuben and Oswego counties, New York, the cost of growing an acre of potatoes varied from \$36.95 to \$48.73 last year. It cost one grower \$75.05 per acre; average yield 269 bu.; net profit \$69.60.

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Prince Albert is to be had everywhere tobacco is sold in tippy red bags, 5c; tidy red tins, 10c; handsome pound and half-pound tin humidors—and in that clear, practical pound crystal-glass humidors with sponge-moistener top that keeps the tobacco in such perfect condition.

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Canada extends to you a hearty invitation to settle on her FREE Homestead lands of 160 acres each or secure some of the low priced lands in Manitoba, Saskatchewan and Alberta. This year wheat is higher but Canada land just as cheap, so the opportunity is more attractive than ever. Canada wants you to help feed the world by tilling some of her fertile soil—and similar to that which during many years has averaged 20 to 45 bushels of wheat to the acre. Think of the money you can make with wheat around \$2 a bushel and land so easy to get. Wonderful yields also of Oats, Barley and Flax. Mixed farming in Western Canada is as profitable an industry as grain growing. The Government this year is asking farmers to put increased acreage into grain. Military service is not compulsory in Canada but there is a great demand for farm labor to replace the many young men who have volunteered for service. The climate is healthful and agreeable, railway facilities excellent, good schools and churches convenient. Write for literature as to reduced railway rates to Supt. of Immigration, Ottawa, Can., or to

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POULTRY

Edited by F. V. L. TURNER

All letters, inquiries and requests in reference to poultry, should be addressed to the Poultry Editor of The Practical Farmer, Philadelphia, Pa.

Practical Poultry Talks

Poultry Profits

From the viewpoint that considers only the theoretical side of poultry profits there is little to guess at in starting out to make money with poultry.

Simply purchase a lot of chickens (oh, it doesn't matter what kind—Bantams, Langshans, Brahmas, or Leghorns, Barred Rocks, Hamburgs or Faverolles—any kind will do in this particular instance) feed them a little corn, sell the eggs and put the money in bank. Isn't it simple? So is an oil well, or a gold mine, when they are operated successfully.

In the first place, the viewpoint is fine and should not be lost. But unfortunately for all viewpoints each has an opposite; after you look from this side you may also, if you are sufficiently interested to be careful, look from the other. Try both, it will pay, or at least save a loss.

In rare cases hens have paid out at a greater rate than owners expected—usually expectations have been so far in excess of reality that the two could not be reconciled, due in most cases to an utter disregard of all business practices. Most amateurs accept the poultry business as an easy means to an easy end—little to know and much to gain.

As a matter of fact the poultry business is one requiring painstaking effort, just as in any other business, even a milk route. It all looks easy, and it is, where knowledge directs operation; likewise the growing of crops is simple.

Let us suppose that the poultry raiser is acquainted with his job—he knows in a second whether his incubator is just right or just wrong. In handling a coal-burning brooder (positively the very simplest thing to do in poultry raising) the amateur is hopelessly lost unless he knows by appearances his young charges are getting along, whereas one who has had experience with another kind of brooder, or even a hen raiser, knows at first glance what is going on inside the chicks for good or bad. Just here begins the matter of profit—the more birds raised to maturity, or sale age, the greater the profit.

So it is in every other branch of the business—more birds lay more eggs; more eggs hatch more chicks. Ordinarily, and this means with normal grain prices, the pullets can be matured for from 70 cents to \$1.25. Some of the cockerels will be sold to market, so will the cull pullets.

Remember, now, that it cost something to produce the youngsters or ready-to-lay pullets. Try this out on this basis: 400 eggs set; 240 chicks hatched, 125 were "brought up" and if you were lucky 65 were pullets. Undoubtedly there will be some culls, perhaps 7 or 8, maybe 15—but for safety's sake figure on 15. Fifty pullets that will lay have cost you \$50 to mature, plus the cost of 400 eggs, cost of incubation and incidentals, say another \$30, or a total of \$80. Deduct the price you got from the cockerels sold, \$25, the price of 15 cull pullets at 50 cents each, and the 5 good males you kept for sale or your own use (another \$10) and your own 50 pullets cost \$37.50 of your money.

Your profits on these depend entirely

upon how well you handle the layers, and you are not going to get an egg a day from every one of these 50 pullets, not by a whole lot. It's going to cost you one large dollar for each of these 50 birds for their board for the year; if 25 of them lay an average of 10 dozen eggs your income from them at 3 cents for each egg will total \$90, leaving you \$40 profit on your investment in hatching eggs, rearing, etc.

Twenty-five of this flock may do very much better than 10 dozen eggs each; if 12 of them yield 200 eggs each and 13 averaged 5 dozen each you would have a mighty poor flock to continue business with. The 12 birds that laid 200 eggs each would be a foundation on which to build a flock that would give more profit in proportion per bird. To this end the trapezoid would pay for itself in a few months and the cost of maintaining the 25 poor or non-layers and the 13 medium but unprofitable layers would be cut to nothing.

But don't be misled into believing that

your 12 200-egg layers are going to immediately reproduce 50 or more of their kind. In the first place, nature will not permit it; in the second, and of vaster importance than successful rearing, is getting a male to mate with these 12 200-egg layers that has the hereditary capacity to produce offsprings with the same laying ability as the females to which he is mated; in other words, he must possess through several generations the capacity of his maternal ancestry. Price here enters into the consideration—the worth of this male is the value of the intelligence put into his making. His progeny may be 25 per cent. good, 75 per cent. bad, or vice versa, so do not feel that in rearing the pullet line resultant from his mating you have a flock of world-beaters in egg production worth untold sums.

Could all egg farmers (in contradistinction to farm poultry raisers) secure an average output of 120 eggs from large flocks, 200, 500, 1000 or 5000, probably the figures of the language slingers would be more nearly accurate.

There is money in poultry, when properly conducted by those that know how—a few hens to gain experience with, an incubator to finally prove your ability, a brooder to do what the hen cannot (raise a great many at one time) and a couple of years of close observation and study

is the safer way. An apprenticeship must be served.

Think this over—it is worth while—it will do two things for you at least, probably more; it will save a lot of money if you have no experience, and it will start your thoughts along lines of breeding better birds to produce greater profit.

Poultry Show Dates

Wilkes-Barre, Pa., Dec. 4-9; F. N. Roll, secretary, Wilkes-Barre.
Indianapolis, Ind., Dec. 4-9; G. C. Ott, secretary, 1106 Linden St.
New York, Palace Show, Dec. 5-9; L. D. Howell, secretary, Mineola, N. Y.
Philadelphia, Manayunk Show, Dec. 6-9; A. L. Johnson, secretary, W. Shawmont Ave.
Wilmington, Del., Dec. 5-9; F. M. Smith, secretary, 903 Adams St.
Woodbury, N. J., Dec. 8 and 9; L. Cheesman, secretary, Sewell, N. J.
Buffalo, N. Y., Dec. 11-16; W. H. Gauda, secretary, 322 Electric Building.
Chicago, Dec. 13-18; D. E. Hale, secretary, Monon Building.
Stroudsburg, Pa., Dec. 12-15; E. M. Paxton, secretary, Stroudsburg.
Boyetown, Pa., Dec. 26-30; H. R. Vandervelde, secretary, Boyetown.
New York, Madison Square Garden, Dec. 26 to Jan. 3; Charles D. Cleveland, secretary, Easttown, N. J.
Union City, Pa., Jan. 2-5; E. C. Mosher, secretary, Union City.
Johnstown, Pa., Jan. 8-13; Earl Penrod, secretary, 104 Union St.
Philadelphia, Mitchell Seed Company, Jan. 9-11; T. A. Radon, secretary, 618 Market St.
Boston, Jan. 9-13; W. B. Atherton, secretary, 36 Bromfield St.
Onondaga Poultry Association fourth annual show, Onondaga, N. Y., Jan. 9-12.
Media, Pa., Jan. 17-20; P. S. Platt, secretary, Wallingford, Pa.



Concrete Stops Big Leaks in Farm Profits

Rot—Farm structures are exposed on all sides to weather. The usual life of country property is therefore less than that of city property. Repairs are expensive. *Concrete won't rot.*

Rats—Rats are especially destructive on farms. They are always hungry for grain and other farm produce. The hole they eat in farm profits is enormous. *Concrete is rat proof.*

Waste—The loss of feed in the unpaved feed lot is a considerable item. When feeding floors are built of concrete there need not be a single kernel lost. *Concrete prevents waste.*

Wind—Heavy windstorms blow down many frame buildings, not only destroying them but resulting in a big loss of feed and other property. *Concrete withstands tornadoes.*

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CONCRETE FOR PERMANENCE

Fire—So great is the fire risk on farms that approximately one-half of the total fire loss is in the country. When a farm building of easy burning material catches fire, it is usually a total loss. *Concrete is fire proof.*

Disease—Stock diseases keep many farmers poor. These are often due to impure water and dirty buildings. Concrete wells, septic tanks and barn floors are a protection against the spread of disease. *Concrete is sanitary.*

Bad Roads—Bad roads cost the farmer the heaviest toll of all. They compel him to haul small loads to market at high cost; they wear out horses and harness—they are often impassable. *Concrete roads are always good—summer and winter.*

Dollar Eggs and the Farmer's Opportunity

(Concluded from page 434)

pound of cracked corn, one pound of whole wheat and one-half pound of oats), are fed as a grain ration.

Barley, Kafir corn, rice, low grade flour, ground oats, sunflower seeds, buckwheat, fish scrap, gluten meal, oil meal, cotton seed meal and many other fruit, vegetable and cereal products may also be profitably employed to help make eggs.

Arrangement of quantities of any feeds procurable in any section of the country can be quickly had from several state experiment stations, or through the columns of this paper.

With such great profit in sight, it behooves the farmers of this country to make not only a few minor improvements, but to carry larger flocks; the proportion of farm income which comes from poultry is so great, is so overwhelmingly profit bearing by comparison with other farm pursuits, that it deserves not only more attention but such increases as will place the farm upon a safer investment basis, a surer bearer of greater income. Today the price of eggs as against the cost of grain, is so far beyond the fine line of profit or loss that the fact cannot be ignored; poultry meat is in greater demand because of the lessened supply of beef, pork and mutton, with no immediate relief in sight for the consumers of these three articles of food.

Farm poultry raising, or culture, differs widely from the average egg farm, or so-called poultry plant, in that the average farmer gives little, if any, of his time to the care of the layers—little money is invested in equipment, buildings or apparatus. Feed expense involves scarcely any of the farmer's crop except in winter, corn chiefly supplying the entire grain allotment. Of course, the small amount of food allowed for farm poultry directly affects the egg output, usually keeping down the lay to nothing from molting time till spring.

In the case of egg farms the investment in buildings and apparatus is enormous compared to ordinary farms practicing agriculture and where chickens are an incident rather than a pursuit or farm enterprise.

In the latter case the layers must produce from November 1st until the fall molt begins, a pullet flock then beginning operations, this process being repeated year after year, the hens going to market as meat, except a proper proportion of the flock kept over for breeders. Here income is greater per hen than on the farm and just at that point begins the big profit in the dollar per dozen farm eggs; the egg farmer buys all of his grain for every day in the year, while the farmer can transmute his seasons, make the pullets lay fall eggs at a dollar a dozen and leave the spring feeding to mother nature, putting grain into the pullets that lay in the dollar season rather than into a lot of molting hens that they may simply live until spring, to reproduce their unprofitable kind.

Cold storage occurred, or was caused, happened, or came about, all through the simple fact that the farm hen lays nothing but spring eggs. If the farm hen would lay as does the egg farm pullet, cold storage would be only half so necessary—thousands and thousands of pullets lay an average of 15 to 20 eggs per month for twelve months, beginning November 1st, while the average farm hen lays but 70 eggs in a whole year, beginning, usually, in late January and ending with her first brood of chicks.

And the pullet nearly always lays as well the first month as she does later, bringing the high priced eggs well within the reach of the farmer while they are in demand.

A little money, not much time and no more thought than is now devoted to farm poultry will carry the farm income further along, will more nearly meet the increases of life's necessities and add to the inventory value of property.

What We Are Asked

Old Reds for Breeding.—J. S. Pennsylvania, writes: "I have 8 Rhode Island Red old hens; they have laid two years, but are molting just now; some have finished, while others are beginning. I get one and two eggs a day, and some days none. Do you think it will pay me to keep them over winter, then next spring get a rooster and raise some young ones?"

If you know that your Reds are good layers they are worth breeding from. As profit payers in egg production they are worthless at the age you state. Buy a cockerel from some known laying strain. Hatch out your chicks in late March and very early April.

Canker.—J. D. N., New Jersey, writes: "Please prescribe a treatment for canker. Is canker a roopy condition?"

Canker, simple yellowish masses formed along the inside of the beak, are not necessarily roopy—roopy conditions may be similar to canker in appearance, but usually the difference is in the extent of the formation as well as in color, roopy conditions usually being accompanied, in the diphtheritic form, by gray patches on the floor and roof of the mouth rather than by yellowish patches on the sides of the beak. Tincture of iodine, with an equal quantity of water, swabbed on the patches with a cotton swab or camel's hair brush, every day, will usually take care of canker. Some internal corrective of a bad stomachic condition should be given, the grain ration cut down and kerosene oil, a teaspoonful at watering time, should be lightly poured over the drinking water. Sweet oil, a dessert-spoonful every other day until three doses are given, will help quite a little as a stomachic, laxative and nutrient.

To Determine Layers.—W. H. M., Delaware, writes: "The so-called systems regarding the lay-bones, length of abdomen, etc., to determine the laying hen is there a correlated system for the male? Will the males show the same approximate measurements as the female?"

This is a highly involved and difficult subject. There is ample proof that anatomical conformation, or shape, length, width and depth of the bone structure of a hen, has governing influence on egg production; or that certain well established bone lines exist with certain ratios of yield. These bone lines indicate, to those familiar with the practice in the case, just how many eggs a hen will lay from her first egg until a year hence. Within a very few eggs (and in nearly every case this is absolute) of the hen's normal output for a laying year the hen will continuously exhibit the same bone contour—if disease, molting or organic changes interfere, the yield will be affected either temporarily or permanently, the bone contour will change to some extent with such interference, but will resume its egg laying indication if the health of the bird is restored to normal. Males exhibit the same characteristics in bone lines as the female, other indications of a lesser nature being considered in conjunction with these bone lines, such as headgear, eyes, size and shape of skull, etc. In conjunction with trapezoids the hen's anatomy is proved and illustrates actual egg laying capacity.

Size of Egg.—E. J. W., Pennsylvania, writes: "Is the little egg, the size of a marble, the first or last of a hen's lay, for a rest, or molting, or what?"

Really it is none of these; the small egg is usually caused by inflammation of the oviduct or egg passage, this organ being unable to properly perform its function. The mere cessation of laying usually effects a cure through rest. There is no remedy in the case except nature.

Don't bet on the hen that lays two eggs in one day—she may not lay again in a week.

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MAMMOTH BRONZE TURKEY TONS from a 57 lb. tom, white edgings, B. P. Rock cockerels, Royal Blue strain best type and color. Miss Susie Wright, Veedendale, Ky.

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Pullets bred from pedigreed layers, at reasonable prices. If you wish to improve laying quality and color of your flock, get one of my cockerels.
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OUR EXPERIENCE POOL

All our readers are invited to contribute their experiences on the topics under discussion. \$2.00 will be paid for the best, and \$1.00 for the next best contribution, and 50c for each other article published. Contributions must be in our hands 15 days before date of issue.

Topic No. 1209, Dec. 15.—We notice in our travels that a great many farmers in the East still shock and husk their corn in the field. If you are one of them, what care do you take of the fodder? Do you cut or shred it for feeding? If you feed it outside, what do you do with the stalks? Why don't you get a silo? Limit, 250 words.

Topic No. 1210, Jan. 1.—What are you doing with the farm wood lot to conserve or increase it? If you are setting out new trees, what varieties are they? Have you provided any fire protection for it? What products do you receive from it except fuel and fence posts for home consumption? How large is your wood lot and what do you consider it worth to you each year? Limit, 250 words.

Topic No. 1211, Jan. 15.—How do you handle the manure from your stock? Do you have a truck carrier in the stable? Do you pile the manure in the barnyard, in a shed or haul it direct to the field? Do you use a spreader? Can you tell us how much it costs to apply a ton of manure to your fields? Limit, 250 words.

Topic No. 1208.—What provision have you made for next summer's ice supply? How do you cut and harvest it? Is your ice house above or below ground? Do you pack the cakes in or just dump them? What do you use to cover the ice? How much does your supply cost?

E. C. T., West Chester, Pa.—For the past 30 years the same "hole in the ground" on our farm has served as an ice house. Nine years ago the planks lining it had rotted through, so that it was necessary for us to rebuild it. We went to the woods and secured eight red cedar logs from 6 to 8 inches in diameter and 12 feet long. These were fastened into three squares, 10 feet inside measurements, and placed one at bottom, one in the middle and one at top of the hole. Two-inch rough yellow pine planks 12 feet long were then stood on end and fastened to the inside of the cedar frame, forming a box 10x10x12 feet. Estimating 40 cubic feet for a ton of ice, our house will hold about 30 tons.

In our uncertain winter we cut ice when it is 6 inches thick, because if we waited until it was thicker very often we would not get any. We use a cross-cut saw and axe for the cutting and have found that a short handle, wide 4-ton manure fork is the best thing to load the cakes on to the wagon or sled. We haul it about one-third of a mile from a creek dam, and back up to the house and just dump the cakes in. Possibly if the cakes were larger, regular shape and we wanted to handle them more carefully, but as we do it, we have ice all summer and fall so see no use of taking more trouble with it. When the house is full we cover it with 2 feet of straw and make sure that the roof is tight; ventilation is provided by slats in the peak. Warm spring rains melt a lot of ice if they are not properly drained away. Our house has only natural drainage on the bottom, but the soil is sandy and located on a bank, so that it is never wet. We count on about six dollars as the cost of getting our ice supply, which is small compared to the satisfaction of keeping food in the refrigerator all summer and supplying the neighbors with occasional lots for making ice cream.

B. P. E., Hicksville, O.—Our ice house is of the ordinary double wall type with sawdust between. It is the second of its kind, for we have been putting up ice for ourselves nearly 40 years. The little structure stands on the bank of our pond about 10 rods from the house. The pond is fed by fountains. In spite of being so near the source of ice it takes six men about a day to fill. A small job takes time to start. The cost in labor is about \$10. I do not count the horse or team that pulls the ice up the ways—horse labor is at a discount in winter. A load of new sawdust to keep the supply adds about \$2 to the cost of filling.

We cut the ice into blocks 10x10x8 inches. A small block of ice must be carefully packed, and I suspect a big one should also. Some winters we have been short handed, or in a hurry at ice harvest. No, we didn't "just dump" the ice in then, but we packed it carefully. Alas, the whole block melted before the end of the summer, just when we wanted ice the most. To keep ice from melting it must not only be packed, but kept packed. You can't leave it to itself all

never closed, for through them must escape dampness that stored ice always produces. Good drainage was provided by filling in with earth, making the floor somewhat higher than the ground outside. On this a course of small tiles was laid around the outside and 2 feet from each wall.

I prefer ice 12 to 18 inches thick, although 6 to 8 inches will do. The thicker it is the better it keeps. For cutting I use a cross-cut saw with one handle removed and a small weight attached, cutting all the blocks as near 18 inches square as possible. For handling the ice I have two ice tongs which my blacksmith made for 50 cents each. Sawdust is used in packing. I put a thin layer of sawdust on the bottom, then build the ice up in a solid block, leaving a space all around the outside of fully 8 inches, filling this solidly with sawdust as the ice pile grows. When the house is filled I cover the whole mass with about 18 inches of sawdust. Cost of filling is about \$12.

E. A. W., Street, Md.—In this, and nearby counties, most of us obtain ice from private ponds built for that purpose, though in our coldest winters some harvest from the larger streams. Some cut with ice saws or with common cross-cut minus one handle; but unless the ice is thicker than common, one experienced axe man can cut faster than several saw men. The ice is floated to the lower end of a chute that slopes from the loading platform down to a couple of feet under water; here it is broken into cakes of about 3x4 feet and two men, one on each side of chute, easily slide these cakes up on the platform, using ice hooks or pike poles.

The ice is carried to underground houses, in wagons or sleds, and unloaded by means of other chutes that slope into openings of houses. Down in the pit a man packs the ice to exclude air so far as possible, using a hammer when necessary. Some pour water over the packed ice so that it may all freeze solid. Either sawdust, straw, hay or corn stover is packed over the ice to exclude air.

Here, neighbors frequently help each other free of charge in ice harvest. Otherwise the average cost is from 70 cents to \$1 per 100 cubic feet of packed ice, with haul not exceeding one-quarter mile. Cost depends on length of haul, capacity of teams, condition of ice weather, roads, etc.

E. A. G., Buchanan, Va.—Although our ice house was made a number of years ago, it proves so satisfactory that I believe others may be helped by our experience. The house is below ground, 10x10x10 feet, with walls of white oak poles about 6 or 8 inches in diameter, cut in nearby woods, built in like a log house, then lined with waste material from a sawmill. A drainage pool 2 feet deep was left under the middle of floor, which was made of heavy slabs, the roof being of white oak shingles. In harvesting, the ice is cut into blocks with axes and drawn to the bank with hooks. It is thrown into the house where a boy beats it small while the wagon goes for another load. When the house is completely filled it is best to allow a few days for the ice to settle and then cover it well with sawdust. It is important to watch and pack covering good at sides, as ice shrinks, adding more as may be necessary to keep it well covered. We prefer sawdust, but when that is not convenient find straw a very satisfactory covering.

This house is on a northern slope, well shaded, and ice usually keeps through summer, sometimes until sawdust is thrown out for refilling. The cost has varied according to wages, condition of ice, etc., from \$2.50 to double that amount. We have a short haul.

J. U., Tunnel Hill, Ill.—My ice house is 14x16 feet. Good, smooth drop-siding was used for outside, which is painted; for inside, rough lumber was used. Spaces between studding were left open at top. To accomplish this the inside sheathing stopped at about 4 inches below the plate at top of studding. Thus the side air is allowed to flow out and over the ice, thence out through small windows provided in each end of building near the peak. These openings are filled with upward slanting blinds, thereby forcing air currents upward and away from the ice, insuring free circulation at all times. These openings are

somewhat upon the size of the refrigerator in which it is to be used.) Twelve wagon loads of these blocks will fill our ice house. A heavy board placed from the sill of the door to the bottom of the pit makes a convenient slide for the ice. Sawdust is used plentifully for packing. If there is snow on the ground it is shoveled in between the layers. Ice is placed a foot from the wall and the space packed tightly with sawdust. Also a heavy layer of sawdust is thrown on top when the packing is done. The cost of sawing, hauling and packing is usually from \$20 to \$25, and can be done in one day.

H. E. Z., Seven Valleys, Pa.—Ice, with us, is not a necessity, but is stored mainly as a luxury, and for this purpose we find a house 12x12x12 feet amply large to last us until a new supply is ready. We find several things essential for the keeping of ice. The bottom of the house must be well drained and at least 6 inches of sawdust used on the bottom. The ice must be packed as close or tight as possible and a 6-inch space left all around to be filled with sawdust or some other insulating material. The house must be well insulated with two board walls, leaving a 4-inch space between to be filled with sawdust. Sawdust covering a foot deep must be put over the ice when the house is full. By observing the above precautions we find no difference in keeping ice above or under ground. Our yearly supply costs us very little, as the house was simply changed from a useless building to an ice house, the work of filling coming at a time when work is not pressing and a neighbor is generally glad to help store ice for his supply.



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The Women's Exchange

This is the farm women's own department—for them and by them. It is devoted to the discussion of topics of everyday interest to the women of the farm family. The Practical Farmer invites— and expects—you not only to write your experiences on the topics under discussion but also to propose topics for future discussions. The best letter published herein each issue will be awarded a prize of one dollar, and for each other letter published we will pay fifty cents. Address: WOMEN'S DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.

DECEMBER 15.—Christmas Trees, Decorations, Entertainments and Dinners. We want unique suggestions for any one or more of these features of the Yuletide festivities. Tell us, in not more than 250 words, of your discoveries as to how Christmas may be brightened in the farm home.

JANUARY 1.—Have you made or lost money by raising turkeys, ducks, geese or guineas? Give briefly your experience and the figures on the investment and its profit or loss for any or all of these lines. Limit your manuscript to 250 words.

JANUARY 15.—Do you utilize the culls from your orchard and vineyard—apples, peaches, pears, plums or grapes—and if so, how do you do it? Do you consume all these cull products at home or do you have some to sell, and if so what prices and profits do you get from them? Limit, 250 words.

Get your contribution in early. If it does not reach us at least 15 days before the date of issue, it will be too late.

Home-made Christmas gifts. Describe and give full directions for making one article suitable for a present. Give us something new if possible.

Miss J. M. G., Buchanan, Va.—A bag of black brocade ribbon, the flowers outlined with jet beads cut from old dress and hat trimmings, has been much admired. The ribbon is sewed together to make the bag the desired width, the seams finished by straight rows of beads taken on strong thread, a few at a time, and back-stitched to the material. The flowers are outlined in the same way, and the leaves by sewing down single beads with little spaces between, like seed stitch in embroidery. The bag is lined with plain silk and finished with a heading and double ribbon loops for handle.

For a young girl or one desiring an evening bag the same idea could be carried out using some of the beautiful Persian ribbons or silk with the colored seed beads now so popular, the handles made by crocheting cord of silk to match, run through crochet-covered rings, sewed around the top an inch or more below the edge.

Either the black or colored bag would make a handsome gift at a nominal cost, since remnants of ribbon are frequently to be found on the bargain counter and the beads are not expensive. One frequently has left-over materials that can be utilized, as was the case with the above original method of decoration.

Mrs. N. G., New Berlin, N. Y.—A gift that is different and much appreciated by town people is something direct from the farm, such as a basket of choice apples or winter pears; a card of honey, a can of maple syrup, a nicely dressed fowl, some pop corn or native nuts; a roll of butter, a fruit cake, a piece of home-cured dried beef or even a fern, plant or bulb from the woods.

An old lady, living alone, and having few near relatives to remember her at Christmas, was made very happy by a basket of prepared food. It usually contained a chicken, brown and white bread, jelly, sauce of some kind, two kinds of cake, a pudding or pie, apples, oranges and nuts and home-made candy. No doubt the spread lasted her several days and her joy in it was almost like a child's.

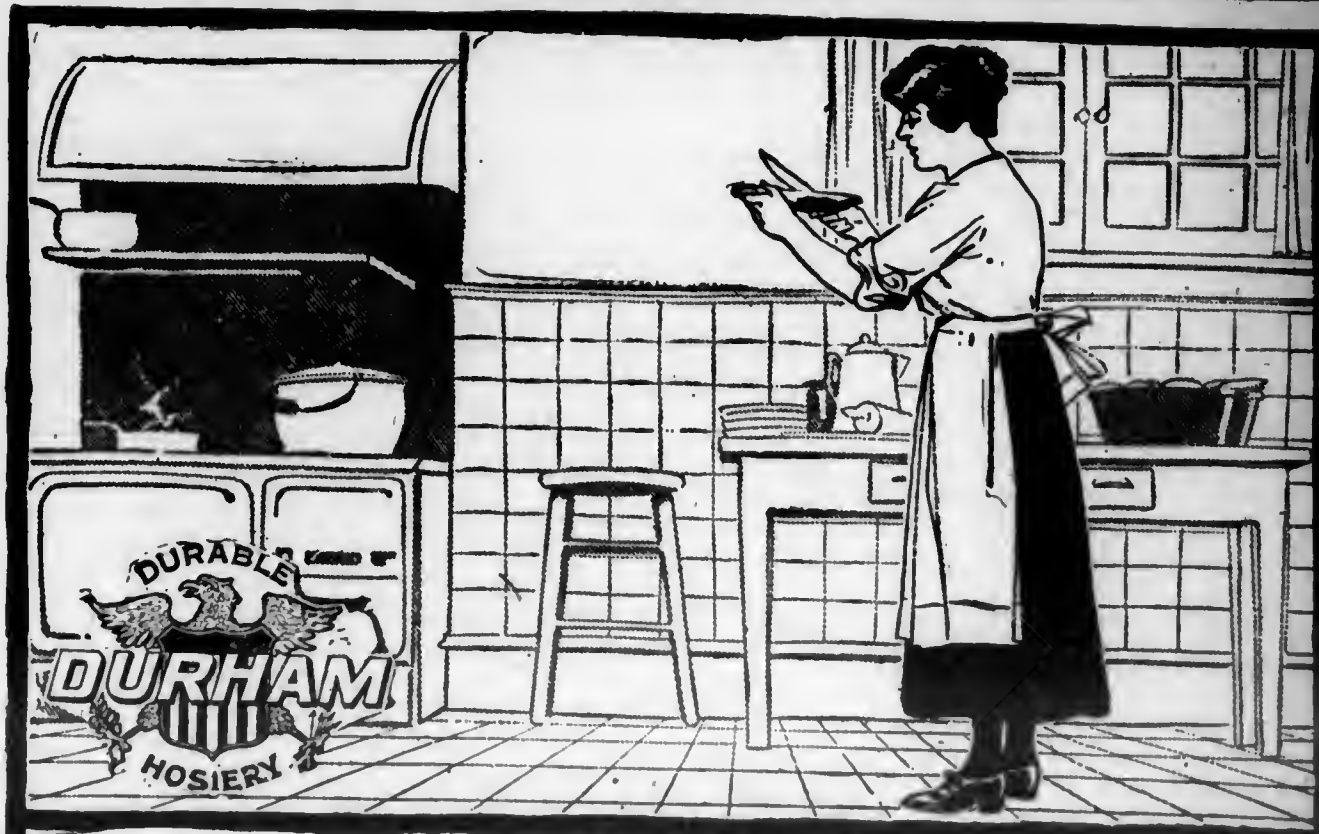
M. A. B., Flora Dale, Pa.—Envelope-shaped handkerchief cases are useful, pretty and inexpensive, and can be made by any one who does needlework. Linen, mercerized cotton poplin, or other washable materials of similar weight are suitable. Take a piece of goods 17x3½ inches to make an oblong one. Baste a narrow hem across one end; feather-stitch it with embroidery cotton the same shade as used on flap. Shape the flap (experimenting with paper until a pleasing result is secured) and finish the edge by buttonholing, crochet, or feather-stitch. Single initials, monograms, or simple designs make pretty decorations. When the flap is finished, sew up the ends of the envelope. If white linen is used and the ornamentation done in color, a satchet to match the color may be added. Brown linen with the work done in brown makes a nice case for a man's use, but it is better to

A. L., Martinsburg, W. Va.—One of the nicest little gifts I have, and one that has been very useful to me, is a "traveler's laundry kit," which can be made at little cost. Use ¼ yard of moire or Persian ribbon 4 inches wide to make a little bag, making an inch hem at the top. This can be basted in so as to form a casing in which to run No. 1 ribbon to draw it up.

Inside put ½ dozen small clothes pins, 6 feet of heavy cord and a little piece of soap wrapped in waxed paper and tied with ribbon.

When traveling this is very convenient to have for hanging gloves, handkerchiefs or any small articles that you would wish to wash in your room. Small clothes pins about 2 inches long can be found in any of the toy shops.

H. McK., Mercer, Pa.—I am going to make collars for Christmas. They are pretty and practical and can be made at small cost if one has good taste and a little spare time. With a good pattern I am going to cut a number of collars from organdie and lawn. Plain white organdie is best because it stays in place better, but I have some lawn, so I am going to use it. I shall put a ¼-inch



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hem on some and trim with crocheted lace; there are so many pretty easily made edgings. On others I shall use a 1/2-inch hem and make a border of French knots just inside the hem, using white, pale blue or pale pink lustrous cotton, or make a cluster of knots in the corners. Any one who embroiders well could make variations by using hand embroidery. The inside of the collars will be finished with bias facing. As these collars are so much worn now on almost any kind of dress or coat, I think they will be appreciated as Christmas gifts.

Miss J. F. S., Uniondale, Pa.—A most inexpensive and serviceable Christmas gift is made as follows: Take 6 inches of any color satin ribbon about 3/4 inch wide, then to one end sew a small safety pin and to the other a small ivory ring. Attach two of these completed gifts to a card on which has been written the following verse:

When you on a journey go,
Take us without fail,
Pin us to your skirt-band,
And hang us on a nail.

Mrs. H. H., LaGrangeville, N. Y.—A very useful gift is a twine holder. Seven inches of cretonne will make five. Cut a 4-pointed star 9 inches from point to point, hole in center. Bind the points with narrow ribbon, fasten points together with hook and eye so that the ball may be replaced when used up. Hang up with a strip of ribbon and bone ring. Eight cents fully covers the cost of each—small piece figured goods, 1 yard pink ribbon and ball of red cord. Write this verse on the card enclosed: "When I am nowhere to be had, You are sure to want me mighty bad, So hang me on a handy nail, And when you want me pull my tail." These gifts are more appreciated than something that is put away to be looked at only occasionally.

L. M. T., Pine Creek Mills, Va.—Not long ago I saw an article which appealed to me as a gift for young and old alike. It was a knitted shoulder scarf. The materials for this were three balls of mercerized crocheted cotton and two skeins of eight-fold Germantown wool. The style of knitting is just the plain stitch. Last on 60 stitches, using the cotton first, knitting a length of 8 inches, then alternate cotton and wool, knitting two rows of wool to one of cotton until the wool is used up, then 8 inches more of the cotton. Finish by gathering the ends close and sewing on each a tassel 5 inches long, made of the cotton. The one I saw was of blue and black, but any desired combination of colors may be used. Of course, the age of the wearer would help decide.

L. K. Z., Hatfield, Pa.—One inexpensive, as well as useful, gift which I am making is a combing jacket. It is very simple to make. I bought a Turkish towel 42 inches in length and 20 inches in width for 50 cents. I cut it out round in the center for the neck, and slit it from the neck all down the front. Where I cut I carefully hemmed very narrowly. A crocheted edge finished it with width and taste being a matter of choice. I work a narrow edge on mine. Edge: 1st row, 3 dc in hem one-fourth inch from corner; ch 7 and 3 dc on opposite side from corner; ch 5, dc in hem one-fourth inch from last 3 dc, rp, ro. 2nd row, 6 t, 1 p, 5 t, under 5 chain, 7 dc, under 5 ch, 1 dc in center of 3 dc, 5 t, 1 p, 4 t, under next 5 ch, rp, ro. After leaving 24 inches for armholes lace 9 inches on each side with 1 1/2 yards ribbon.

S. A. S., Elkhart, Ind.—One year my sister and I made calendars for Christmas gifts to aunts and cousins. We purchased picture post cards, views of our town, some calendar pads and several yards of red and green baby ribbon. Three pictures were selected for each calendar, choosing views that would harmonize, and the pad was pasted on a lower corner of one of them. The cards were joined together horizontally, one above another, by ribbon pasted on the back, leaving 1/4-inch spaces between the cards. We used red ribbon for some and green for others, but the two colors may be used together. We glued one end of the ribbon securely on the back of the lower card, fastened the ribbon across the backs of the next two cards 1 1/2 inches from the end, left 7 inches as a loop to hang it by and then pasted the

ribbon on the other end of the cards, taking care that the spaces between the cards are the same at both sides or it would not hang straight. If you have a Kodak these calendars can be made much more interesting by selecting views which will be of special interest to the recipient.

Mrs. C. H., Avoca, N. Y.—A talcum slapper is made of a lamb's wool sole edged with silk cord and at at one end is a bag of satin, large enough to hold the talcum case with its perforated top. The powder is shaken on the lamb's wool then applied to the skin after the bath with little pats, which thoroughly distributes the fragrant particles. A loop of the cord at the back of the sole near the toe serves to hang it up. A pretty touch of personality may be given by working on the satin bag the initials of the person who is to receive it.

What Our Farm Women Ask

We receive a great many suggested topics for the Women's Exchange which we are unable to use because not enough of our readers have had experience along these lines to make a complete discussion. Knowing, however, that there must be some who could answer the questions we are going to submit them to our readers from time to time and will be glad to receive information in reply from such as possess it, for the benefit of the questioners. The following are a few received recently, who can answer them?

Mrs. J. F. F., Pennsylvania, writes: 1. Please give me a receipt for canning pumpkins. I have tried for years to keep them, but never found a receipt that was good.

2. Is there any possible way to keep "liverwurst," as the German people call it, until weather becomes warm?

3. Is there any possible way of washing white woolen knit goods, such as sweaters and gloves, to keep them pretty and white without shrinking?

4. How can an elderdown cloak be cleaned at home?

5. Please give a receipt for fruit cake that is a light color. All I have ever tasted were dark, except one which I saw in a Virginia home, so there must be a way to make it.

Mrs. M. S. C., Virginia, writes: How do you treat your house plants in the winter to make them blossom?

Mrs. T. A. B., New Jersey, writes: Please give me receipt for salad dressing. What do you use as a substitute for eggs when they are high priced?

Mrs. H. O. W., Pennsylvania, writes: Please send me a receipt for tanning sheep hides, both with wool on and off, and would the same do for tanning furs?

Mrs. L. H. D., New York, writes: Please give me some eggless receipts for cake, cookies, gingerbread and doughnuts.

Mrs. J. F. F., Delaware, writes: Please send directions for cooking parsnips in some other way than blending with potatoes.

Gift for Invalid

CHARLOTTE A. BAKER.

A Christmas gift for a "shut-in" who has all wants supplied, is often a problem. You want something that is different and something that will last for at least a little while. Why not send a bulb, and let your friend watch it grow? One can find Chinese lily-bulbs on the market costing about three for a quarter. These are planted in water and bloom in about six weeks. The narcissus and jonquil cost about thirty-five cents a dozen for the varieties to be planted in earth, and forty cents for the variety in water. These mature in about two months. While the narcissus comes in many gay colors, one must remember it has a heavy perfume, and may not be suitable for a small room.

Colorado Agri. College.

Rye Flour Cuts Bread Cost

With the price of wheat flour soaring almost daily, the housewife is vitally concerned with any suggestions for lowering the cost of the "staff of life." To answer occasional inquiries for methods of utilizing rye flour, Miss Pearl MacDonald, in charge of home economics ex-

tension at the Pennsylvania State College, has prepared several receipts.

The following receipt for rye bread is simple and inexpensive:

2 cups liquid (half water and half milk), 2 tablespoonfuls fat (lard or butter), 2 tablespoonfuls brown sugar, 1 teaspoonful salt, 1/4 to 1 yeast cake dissolved in 1/4 cup luke-warm water, 3 to 4 cupfuls rye flour, enough wheat flour to knead into dough.

Scald liquid, add fat, sugar and salt; when luke-warm, add dissolved yeast and enough flour to make a batter. When light, add enough more flour to make a dough. Knead till smooth and elastic. When slightly more than doubled in bulk, make into loaves. When light, bake from 50 minutes to one hour.

A combination of rye and wheat flour gives a lighter and more desirable loaf than one with rye flour alone.

Our Fashions and Patterns

Full directions for making, as well as the quantity of material required, accompany each pattern. Patterns are perfect-fitting and seam allowing. When ordering write your name and address in full, state the number and size of each pattern you want, and send 10 cents for each. Address: FASHION DEPARTMENT, THE PRACTICAL FARMER, PHILADELPHIA, PA.



8097.—Ladies' waist. Cut in sizes 36 to 44 inches bust measure. The waist closes at the left side of the front.
8098.—Boys' Russian dress. Cut in sizes 1 and 2 years. The dress closes at the right side of the front.
8099.—Ladies' skirt. Cut in sizes 24 to 32 inches waist measure. The skirt is cut in two pieces and may be made with or without side roke and pockets.
8100.—Child's apron. Cut in sizes 4 to 12 years. The apron may be developed in linen, gingham or calico.
8101.—Ladies' dress. Cut in sizes 36 to 44 inches bust measure. This dress has a four-gored skirt.
8102.—Ladies' apron. Cut in sizes 36, 40 and 44 inches bust measure. The apron is cut in one piece from the shoulder to the lower edge.

8103.—Children's coat. Cut in sizes 2, 4, 6 and 8 years. Serge, cheviot or chinchilla may be used in making this coat.
8104.—Misses' dress. Cut in sizes 14 to 20 years. The dress has a two-gored gathered skirt, plaited at the front.
8105.—Girl's yoke dress. Cut in sizes 6, 8, 10 and 12 years. The dress slips on over the head and long or short sleeves may be used.
8106.—Ladies' dressing sacque. Cut in sizes 36, 40 and 44 inches bust measure. The sacque may be made with or without the seam at the back.
8107.—Ladies' apron. Cut in sizes 36, 40 and 44 inches bust measure. The apron is cut in one piece from the shoulder to the lower edge.

8108.—Boys' Russian dress. Cut in sizes 1 and 2 years. The dress closes at the right side of the front.

8109.—Ladies' skirt. Cut in sizes 24 to 32 inches waist measure. The skirt is cut in two pieces and may be made with or without side roke and pockets.

8110.—Child's apron. Cut in sizes 4 to 12 years. The apron may be developed in linen, gingham or calico.

8111.—Ladies' dress. Cut in sizes 36 to 44 inches bust measure. This dress has a four-gored skirt.

8112.—Ladies' apron. Cut in sizes 36, 40 and 44 inches bust measure. The apron is cut in one piece from the shoulder to the lower edge.

8113.—Children's coat. Cut in sizes 2, 4, 6 and 8 years. Serge, cheviot or chinchilla may be used in making this coat.

8114.—Misses' dress. Cut in sizes 14 to 20 years. The dress has a two-gored gathered skirt, plaited at the front.

8115.—Girl's yoke dress. Cut in sizes 6, 8, 10 and 12 years. The dress slips on over the head and long or short sleeves may be used.

8116.—Ladies' dressing sacque. Cut in sizes 36, 40 and 44 inches bust measure. The sacque may be made with or without the seam at the back.

8117.—Ladies' apron. Cut in sizes 36, 40 and 44 inches bust measure. The apron is cut in one piece from the shoulder to the lower edge.

8118.—Boys' Russian dress. Cut in sizes 1 and 2 years. The dress closes at the right side of the front.

8119.—Ladies' skirt. Cut in sizes 24 to 32 inches waist measure. The skirt is cut in two pieces and may be made with or without side roke and pockets.

8120.—Child's apron. Cut in sizes 4 to 12 years. The apron may be developed in linen, gingham or calico.

8121.—Ladies' dress. Cut in sizes 36 to 44 inches bust measure. This dress has a four-gored skirt.

8122.—Ladies' apron. Cut in sizes 36, 40 and 44 inches bust measure. The apron is cut in one piece from the shoulder to the lower edge.

8123.—Children's coat. Cut in sizes 2, 4, 6 and 8 years. Serge, cheviot or chinchilla may be used in making this coat.

8124.—Misses' dress. Cut in sizes 14 to 20 years. The dress has a two-gored gathered skirt, plaited at the front.

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8133.—Children's coat. Cut in sizes 2, 4, 6 and 8 years. Serge, cheviot or chinchilla may be used in making this coat.

8134.—Misses' dress. Cut in sizes 14 to 20 years. The dress has a two-gored gathered skirt, plaited at the front.

8135.—Girl's yoke dress. Cut in sizes 6, 8, 10 and 12 years. The dress slips on over the head and long or short sleeves may be used.

8136.—Ladies' dressing sacque. Cut in sizes 36, 40 and 44 inches bust measure. The sacque may be made with or without the seam at the back.

8137.—Ladies' apron. Cut in sizes 36, 40 and 44 inches bust measure. The apron is cut in one piece from the shoulder to the lower edge.

Other People's Business

The Romantic Career of the Practical Miss Dale

By HARRIET LUMMIS SMITH

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CHAPTER I.

INTRODUCING PERSIS.

The knocking at the side door and the thumping overhead blended in a travesty on the anvil chorus, the staccato tapping of somebody's knuckles rising flute-like above the hammering of Joel's cane. To some temperaments the double summons would have proved confusing, but Persis Dale dropped her sewing and moved briskly to the door, addressing the ceiling as she went. "Twon't hurt you to wait."

The stout woman on the steps entered heavily and fell

Diantha. I told your mother Saturday when she sent the goods over."

The girl rose nimbly, the movement revealing unexpected height and extreme slenderness, both qualities accentuated by her very juvenile attire. She made a bird-like dart in the direction of the door, then turned.

"Mother said I was to coax you into finishing it for tomorrow," she announced, a light mockery rasping under the melody of her voice. "I know it won't do any good, but I've got to be obedient. Please consider yourself coaxed."

"No, it won't do any good, Diantha. The wait'll be ready about two o'clock on Saturday," Persis stood watching the girl's retreating figure, and the serenity of her face was for the moment clouded.

"Diantha Sinclair reminds me of a Lombardy poplar," remarked Mrs. West. "Nothing but spindle till you're most to the top. It does seem fairly immoral, such a show of 'stockings'."

"Annabel Sinclair seems to think she can stop that girl's growing up by keeping her skirts to her knees," returned Persis grimly. "A young lady daughter would be a dreadful inconvenience to Annabel. Then the momentary sternness of her expression was lost in sympathetic comprehension as Mrs. West bowed her head and sprinkled the black serge with tears.

"There, there, Mrs. West. Cry if you feel like it. Crying's the best medicine when there's no men folks around to keep asking what the matter is. Just let yourself go, and don't mind me."

"Of course you know," exclaimed Mrs. West, her fat shoulders heaving as she took full advantage of the permission. "Everybody knows. Everybody's talking about it. To think that a son of mine would stoop to steal a wife's affection away from her lawful husband."

"Don't make things out any worse than they are, Mrs. West. Your Thad can't steal what never was. And Annabel Sinclair never had any affection to give her husband nor nobody else."

Mrs. West's distress was too acute to permit her to find comfort in a distinction purely technical. "Thad always was such a good boy, Persis, but now I'm prepared for anything. I think she's capable of working him up to the point of running away with her."

Again Persis proffered consolation. "I don't think so. Annabel Sinclair's what I call a feeble sinner. She reminds me of Joel when he was a little boy. He'd go down to the river, along in April when the water was ice-cold, and he'd get off his clothes and stand on the bank shivering. After his teeth had chattered an hour or so, mother'd come to look him up and Joel would get into his trousers and go home meek as a lamb. Well, Annabel's the same way. She likes to shiver on the bank and think what a splash she'll make when she goes in, but she hasn't got the courage to risk a wetting, let alone drowning."

Mrs. West, blinking through her tears, looked hard at her friend. "Seems to me you're talking awful peculiar, Persis. Most as if you'd respect Annabel more if she was wicked."

"Maybe I would," acknowledged Persis bluntly. "Seems to me it's almost better to have folks in earnest, if it's only about their sins. Annabel Sinclair turns everything into play-acting, good and bad alike."

"I don't know why Thad can't see through her," cried the distracted mother, voicing an age-old wonder. "I used to think he was as smart as chain lightning, but I've changed my mind. Any man that'll let Annabel Sinclair lead him around by the nose hasn't got any more than just enough sense to keep him out of an asylum for the feeble-minded, if he is my son."

"That's where all of 'em belong when it comes to a woman like Annabel," said Persis with unwonted pessimism. "And Thad's just young enough to be proud of having that sort of acquaintance with a married woman. Men are queer cattle, Mrs. West. The worst woman living likes to pretend to herself that she's as good as anybody, but a man who's been decent from the cradle up, gets lots of comfort out of thinking he's a regular devil. At the same time," she conceded, with a change of tone, "the thing ought to be stopped."

"Of course it had. But how are we going to do it? I've talked to Thad and talked to him, and so has his father. If I thought the minister would have any influence—"

"You just let Thad alone for a spell," Persis commanded with her usual de-

cision. "And you leave this thing to me. I'll try to think a way out."

This astonishing offer was made in a matter-of-fact tone, significant in itself. Persis Dale earned her living as a dress-maker, and pleaded out her income by acting as a nurse in the dull seasons, but her real occupation in life was attending to other people's business. She had a divine meddlesomeness. She was inquisitive after the fashion of a sympathetic archangel. It appalled her to see people wrecking their lives by poor judgment, and crass stupidity. Her homely wisdom, the fruit of observant years, her native common sense, her strength and discernment were all at the service of the first comer. Responsibility, the bugbear of mankind, was as the breath in her nostrils.

"I wouldn't do any more talking to Thad," Persis repeated, as Mrs. West looked at her with the instant confidence of inefficiency in one who indicates a readiness to take the helm. "Don't make him feel that he's so awfully important just because he's making a fool of himself. Most boys attract more attention the first time they kick over the traces than they ever did in all their lives before. 'Tisn't any wonder to me that the elder brother gets a little cranky when he sees the fuss made over the prodigal, first because he's gone wrong and then because he's going right, same as decent folks have been doing all the time."

"What do you mean to do, Persis?" Mrs. West's tone indicated that by some mysterious legerdemain the burden had been shifted. It was now Persis' problem.

"That'll bear thinking about," Persis returned with no sign of resenting her friend's assumption. "And while I'm turning it over in my mind, let Thad alone, and don't wear yourself out worrying." The injunction probably had a figurative import though Mrs. West interpreted it literally.

"Wear yourself out? I can't so much as wear off a pound. I've been too upset to eat or sleep for the last two months, and I've been gaining right along. Most folks can reduce by going without breakfast, but seems as if it don't make any difference with me whether I touch victuals or not."

She was rising ponderously when Persis checked her. "Your serge, Mrs. West. We were going to see if 'twas worth making over."

"It's time to get supper, Persis, and there ain't a mite of hurry about that serge. Truth is," explained Mrs. West, lowering her voice to a confidential murmur, "twasn't altogether the dress that brought me over. I sort of hankered for a talk with you. There never was such a hand as you be, Persis, to hearten a body up."

Persis found no time that evening for grappling with the problem for which she had voluntarily made herself responsible. The preparation of Joel's supper was a task demanding time and prayerful consideration, for as is the case with most chronic invalids, his fastidiousness concerning his food approached the proportions of a mania. Her efforts to gratify her brother's insatiable curiosity on points of history and literature, had put her several hours behind with her sewing, and as she owned to a most unprofessional pride in keeping her word to the letter, midnight found her still at work. A few minutes later she folded away the finished garment and plucked from the rag carpet the usual litter of scraps and basting threads, after which she was at liberty to attend to that mysterious rite known to the housekeeper as "shutting up for the night," a rite never to be omitted even in the village of Clematis where a locked door is held to indicate that somebody is putting on airs.

Candle in hand, Persis paused before a photograph, framed in line plush and occupying a prominent position on the mantel. "Good night, Justin," she said in as matter-of-fact a tone as if she were exchanging farewells with some chance caller. As the candle tickered, a wave of expression seemed to cross the face in the plush frame, almost as if it had smiled.

It was a pleasant young face with a good forehead and frank eyes. The indeterminate sweetness of the mouth and chin hinted that this was a man in the making, his strength to be wrought out, his weakness to be mastered. Like the blue plush the photograph was faded, as were, alas, the roses in Persis' cheeks. It was twenty years since they had

kissed each other good-by in that very room, boy and girl, sure of themselves and of the future. Justin was going away to make a home for her, and Persis would wait for him, if need be, till her hair was gray.

He had been unfortunate from the start. Up in the garret, spicy with the fragrance of dried herbs and of camphor, were his letters, locked away in a small horse-hair trunk. Twice a year Persis opened the trunk to dust the letters, and sometimes she drew out the contents of a yellowing envelope and read a line here and there. These were the letters over which she had wept long, long before, blurred in places by youth's hot tears, the letters she had carried on her heart. They were full of the excuses in which failure is invariably fertile, breathing from every page the fatal certainty that luck would soon turn.

The letters became infrequent after old Mr. Ware's "stroke." Persis understood. For them there could be no thought of marrying nor giving in marriage while the old man lay helpless. All that Justin could spare from his scant earnings, little enough, she knew, must be sent home. And meanwhile

Joel having discovered in a three months' illness his fitness to play the part of invalid, had apparently decided to make the role permanent. Like many another, Persis had found in work and responsibility, a mysterious solace for the incessant dull aches at her heart.

That was twenty years before, Persis Dale, climbing the stairs as nimbly as if it were early morning and she herself just turned sixteen, seemed a woman eminently practical. Yet in the changes of those twenty years, though trouble had been a frequent guest under the sloping roof of the old-fashioned house and death had entered more than once, there had never been a time when Persis had gone to bed without a good night to the photograph in the plush frame, never a morning when she had begun the day without looking into the eyes of her old lover.

The most practical woman that ever made a button-hole or rolled a pie-crust, despite a gray shimmer at her temples and a significant tracery at the corners of her eyes, has a chamber in her heart marked "private" where she keeps enshrined some tender memory. At the core, every woman is a sentimentalist. (Continued next issue.)

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The Practical Farmer

Live Stock and Dairy Section

EDITED BY W. H. TOMHAVE

Killing and Dressing Hogs

By W. H. TOMHAVE

Hogs, like other classes of live stock, should be kept off feed at least 24 hours, and not be unduly excited before being killed. Before attempting to slaughter it, the hog should be handled by means of a small rope securely fastened around one of the hind legs. The



Fig. 1—Correct Way to Hold Hog While Sticking

rope may be put back of the tusks in the upper jaw, if it is difficult to fasten the rope around the leg. After the animal has been taken to the place of slaughter it is thrown on its back, and held in position by one or two persons while another does the sticking. This is best accomplished by holding the animal by both its front legs. The person holding it places his legs on each side of the body in the shoulder pits of the hog. It can easily be held in this position as long as it is kept squarely on its back. If it is found difficult to manage a hog in this manner, it may be stunned by the use of an ax or hammer or by shooting. This is, however, a matter of personal preference or convenience.

BLEEDING.—The proper sticking of a hog is very important. It must be properly done in order to drain the blood from the carcass, as the circulation in hogs is slow, and consequently it is more difficult to remove the blood from swine than from the other classes of live stock. The killing is best accomplished with a straight-bladed 6 or 8-inch sticking knife, sharpened near the tip on both sides of the blade. A skinning knife may be used, but it is not so satisfactory as the standard straight sticking knife. With the animal lying straight on its back, scrape the hair from the throat, insert the knife about 2 inches in front of the breast-bone, directly downward, at an angle of about 30 to 45 degrees, and directly over the midline, as directed in Fig. 1. The knife held in this position will sever the arteries coming directly from the heart in front of the chest cavity. Make a long incision, inserting the knife to a depth of 4 to 6 inches, depending upon the size of the hog. It is well to cut in under the breast bone, forcing the knife down to the backbone. In this way the arteries will be cut at a point where they branch from the heart. The knife may be pushed in straight

and turned at the proper depth, in which case the cutting edge on either side of the blade will sever the arteries. Care should be taken not to let the knife go to either side of the midline, as it must enter between the two ribs which are very close together in front of the shoulder. Sticking to one side or the other will permit the knife to enter the shoulder, which will mean a bloody or a "shoulder stuck" carcass. Care must also be taken that the knife is not forced in the chest cavity, which would result in the blood draining back into it, causing a bloody rib and loin. The better way to stick a hog is in a hanging position, but this is not practical for farm conditions, and can only be followed where proper hoisting apparatus is available. If the hog is stuck in this position there is very little danger of the blood entering the chest cavity, as it is drained out by the force of gravity.

SCALDING.—As soon as life is extinct the hog is scalded. It is necessary to have the following tools for this work: A barrel or tank for holding the water, a platform or table, a boiler or kettle in which to heat the water, hog hook, gambrels, and some instrument for scraping, besides the knives that are used for butchering work. The temperature of the water for scalding will range from 150 to 180 degrees F. If live steam is obtainable, the temperature of the water when put into the scalding vessel need not be higher than that required for the scalding work. If the water must be heated in kettles or a boiler, it is well to have the water heated to a higher degree, as it will cool considerably when carried from the boiler or kettle into the scalding vessel. In such case it is better to have the water near the boiling point, and then reduce it to the proper temperature by means of cold water. If convenient, it is well to provide a thermometer by which the accurate temperature of the water can be taken. When a thermometer is not at hand, a fairly reliable test is to insert a finger into the water, and if this can be done without severe burning for three successive times the water is of about the right temperature for scalding purposes.

ACCESSORIES TO AID IN SCALDING.—Various alkalies aid greatly in scalding and removing the scurf from the body of the hog. There are a number of agencies that may be used, but the more common are soft soap, concentrated lye, hard-wood ashes, or coal tar. All of these can readily be secured and will considerably help in removing the hair and scurf. For 60 gallons of water, a cupful of soft soap or small shovelful of ashes, or two teaspoonfuls of lye, or ¼

pound of tar is sufficient to accomplish the desired results.

METHODS EMPLOYED.—Before the hog is put into the scalding water a hog hook is inserted through the lower jaw, which is a convenient way of handling the hog while immersed. If a scalding tank is used, the entire body of the hog is put into the water at one time. It should be entirely covered with the water and kept constantly moving, so that all parts are equally well scalded. As soon as the hair begins to loosen it is well to pull the carcass out upon the bench or table and allow it to "air" a moment, after which it is again put into the water and kept moving until the hair and scurf come off readily. As soon as the hog is completely scalded it is pulled out on the table and the hair removed from the legs and the feet by use of the hands. This is done by grasping the leg and twisting off the hair. With a candle-stick scraper or similar instrument, remove the hair from the balance of the carcass. If a barrel is used for scalding, the hind end should always be scalded first. Thus, if the water is too hot and the hair should set on the body, they are much easier shaved off the hind quarter than from the fore quarter. The hog should be kept in motion while the hind end is being scalded, the same as in the scalding tank. It should be drawn out and aired the same as by the previous method. As soon as the hind end is ready to be scraped, it should be pulled out upon the table, and the hair and scurf removed from the legs and feet and the rear of the body. When this is done the front end is ready to be put into the vessel and scalded in a similar manner. When the hog has been completely scalded and scraped, the carcass is ready to be hung. Before doing this, however, hot water should be poured over it, and as much as possible of the dirt and scurf that remains should be removed. Any hair that has not been removed should be shaved off with a sharp sticking or skinning knife.

If the hog is too large for either the scalding tank or barrel, the scalding can be done by means of old gunny sacks or blankets used as insulators, and the hot water slowly poured over the hog. This insulator holds the steam and scalds the animal just as though it were immersed in the tank. Care must be taken, however, that all parts are covered, and that they are not held under the heat of the water too long. Too hot water will have a tendency to cook the body of the carcass.

Before hoisting the carcass, the tongue should be removed from the head. This is done by cutting inside of the jawbone from below, cutting on each side of the tongue, pulling it through the opening thus made, and drawing it back so that it can be readily removed when the opening is made down through the breastbone toward the neck.

The tendons on the back of the hind legs are loosened and the gambrel inserted. These tendons are opened by making a long incision from the back of the hock down through and between the dew claws. There are two tendons that should be loosened. The first of these is

readily located by just cutting through the skin. After this has been loosened, cut to one side of the second or large tendon which lies directly beneath the outer or smaller tendon.

RAISING THE CARCASS.—Hogs are usually light enough so that they can be raised without a hoisting apparatus. It is very convenient, however, to have a rack about 6 feet high upon which to hang the carcass. If such is not at hand the limb of a tree, a ladder or any convenient place may be used. Care must be taken that the support is strong enough to hold the weight. As soon as the carcass has been hung up, it should be thoroughly washed on the outside with cold water. This is done by pouring the water over it and scraping away the dirt and scurf, beginning near the hind feet or the top of the carcass. The scraping should always be done downward, as otherwise water and dirt will drip over parts of the knife on to the part that has been previously scraped. The first scraping is done with a blade flat against the skin, so as to remove any hair that may not have been shaved off or removed by scalding while the carcass is on the platform. After this scraping, clean, cold water is again poured over it, and scraped down so as to get it clean and dry. No water should come in contact with the outside after the last washing, as it will produce a streaky carcass.

REMOVING THE VISCERA.—The viscera is removed by cutting through between the hams, dividing the pelvic bones. Loosen the rectum by cutting around



Prof. Tomhave Demonstrating How to Open the Abdominal Cavity

and allowing it to drop into the abdominal cavity. A long cut is made through the midline, through which the internal organs are removed. The midline is opened by putting the knife between the first and second fingers of either the right or left hand, depending

upon the hand that is used for cutting. The knife should not project through beyond the fingers. These two fingers are then inserted into the opening made into the abdominal cavity, and are used as a guide in making the cut past the paunch and intestines. In this way there is little or no danger of cutting the internal organs. As soon as the opening has been made, the fat surrounding the paunch is removed. After this, remove the paunch and intestines. The liver lies in this same cavity and is usually removed as a separate organ, although it may be removed at the same time as the other parts of the digestive apparatus. The liver is removed by inserting the hand under the organ and drawing upward. The gall bladder, which lies on the inside of the liver, should be removed before the liver is put away. This is done by cutting the duct and drawing down on the gall bladder so as not to spill it over the outside of the liver. After the abdominal organs have been removed, the pluck, which includes the heart, lungs and thorax, is taken from the chest cavity. This is done by splitting through the center of the sternum or breast bone, and then cutting the membrane which separates the organs of the thoracic cavity from those of the abdominal cavity. The incision is made at point where the connective tissue or white membrane joins the muscle tissue. A cut is then made along the back, cutting the large blood vessel which carries the blood from the heart to the liver, forcing down on the organs, removing them through the opening made in the lower part of the chest cavity. The windpipe and gullet are removed with the pluck. The tongue, having been previously loosened, is now taken from the carcass.

REMOVING KIDNEY FAT.—The kidney fat or leaf lard is considered a portion of the pork carcass. It is much easier to cool the carcass by removing the kidney fat while warm. It should always be lifted or taken out. This may be done by inserting the hand under the lower portion, or that portion which covers the ribs. It is then pulled out in one piece. It should be spread out on a table or platform with the side that is covered by a thin membrane next to the table. In this way it will cool very readily and improve the quality. It should never be put into a vessel or bucket where it does not have a chance to cool. It can then be sent with the carcass if it is to be sold, and will be in much better condition than where it has been allowed to remain inside. It can also be removed much quicker and easier when warm than when it has been allowed to get cold in the carcass, as is sometimes done with light hogs during cold weather. As soon as this has been removed, wash out the chest cavity and the throat with a bucket of clean, cold water. Care should be taken that water is not splashed over the outside. The head may be removed at this time; if not done now it is well to open the mouth for drainage. The carcass should be spread by putting a piece of wood on the inside of the underline to hold the sides apart and allow free circulation of air. During mild weather or with heavy hogs, it is well to split the carcass through the center while it is warm. Such practice will greatly facilitate cooling.

At the present time some home-grown feeds are bringing such abnormal prices that it might be more profitable to sell them and buy other feeds with the same feeding value, yet cheaper. It is essential that dairymen know the production of each cow, and feed on that basis.

Jerseys at the National

By A. G. MORRELL

This is the third of our series of four articles on the Leading Dairy Breeds at the National Dairy Show. They were written at the ring side by our special representative. The Guernsey article appeared in our November 1st issue and the Ayrshire, November 15th. The Holstein article will appear December 15th.

Twenty-five years ago the Jersey was THE dairy cow, and all the pastures in most of the Eastern States were dotted with the fawn beauties, prices were high on both registered and grade stock, and the demand was greater than the supply. Pretty soon the city markets demanded more and ever more milk, regardless of quality so long as it was legal standard;

Dempsey, had to pick six winners from? I think it is safe to say it was the largest ring of Jersey cows that has been shown in twenty years. One fault they still have to correct in this breed—it lacks the size it ought to have and used to have, and it is this lack that helped to depose them as first favorites with the dairymen. But a fault admitted is half cured, and the pendulum is beginning to swing back, with plenty to keep it moving.

The winner in this great class was Gloria Benedictine, owned by Mr. A. V. Barnes, New Canaan, Conn., and imported by Mr. Edmund Butler, of Mt. Kisco, N. Y. What a cow she is! The perfect-



Gloria Benedictine 246997

Winner over 54 other aged Jersey cows in judging class at 1916 National Dairy Show

the ultra-exclusive organization which had charge of the destinies of the breed thought first of its own ideas and last of the cattle it sponsored and the great mass of breeders, not members of the club, who bred those cattle; the wide-awake and broad-minded men who had the same position in regard to the Holstein Association kept booming the Black-and-Whites and enlarging their organization and breeding more and more Holsteins to make market milk; and all this had one inevitable result—the Jersey was being left in the race.

There is an end to all things, and there came an end to this situation. Something over a year ago there was a mutiny, and some barnacles were loosened from the hull, some useless and some harmful gear was thrown overboard and the good ship Jersey Interest took a new tack in the right direction. Jersey breeders made up their minds that wherever the National was held this year they were going to be there, and were going to boost, and boost with all their might and main for the most beautiful of all breeds. And they did it. The Jerseys outnumbered all the other breeds and outshone all the rest, too, as many who "wouldn't have a Jersey as a gift" admitted. And the breeders? Well, when you get together men like George Sisson, of Potsdam, N. Y., J. K. Branch, of Pawling, N. Y., Tom Dempsey, of Ohio, Leander Herrick, of Worcester, Mass., C. I. Hudson, of Long Island, C. I. Hood and his manager, "Jimmy" Dodge, of Lowell, Mass., F. E. Duffy, of Hartford, Conn., "Pat" Robinson, of Egypt, Mass., and M. D. Munn, of St. Paul, Minn., there are certain to be "doings." And these were only a few of the most enthusiastic—there were hundreds more with the little red buttons which said: "Jerseys for mine," for all who ran to read.

Will anybody who saw it forget the 55 aged Jersey cows that the three judges, Messrs. Warner, Van Pelt and

tion of dairy type, wedge-shaped, deep of body with great ribbing, clean shoulders, a most lovely head, and an udder that was without a flaw—she well deserved the distinction of leading this astonishing class. No matter what his fancy, any fair man would admit, after seeing all the breeds judged, that in shape of udder the Jersey is pre-eminent. Imp. Matland's Ruth and Golden Jolly's Wonder, second and fourth cows in this ring, were also owned by Mr. Barnes. If Jolly's Wonder had been about a third larger she would have been first, most certainly, as she was a wonderfully lovely mulberry and white cow with a hide like satin, a wither like a knife blade, a deep barrel, wonderful loins and a perfect bag. For sheer beauty there was nothing in the barns that could touch her. Third place went to Adeline's Fairy Glen, owned by Allendale Farms, Shelbyville, Ky., a very lovely daughter of Fairy Glen's Raleigh.

Nineteen aged bulls make a sizeable ring, too, and the choice of six to head the lot was hard to make. The battle for first place was between a sire and son, Imp. Golden Fern's Noble, seven years old, a grandson of Golden Fern's Lad, and Noble's Sultan Golden Fern, four years old. The younger bull was in better show condition, all could see. The sire was deeper of barrel, broader on the rump, and deeper through the heart. Both were wonderfully fine examples of the best in Jersey breeding. The winner belonged to Wm. Ross Proctor, of Barryville, N. Y., and the second to Mrs. Harry H. Galbraith, Knoxville, Tenn.

All the cow classes in this breed were very full and of splendid type, and it took close work to place them. The heifer classes were a revelation to the onlookers who had not before seen this breed in any numbers. Smooth of finish, level on top, dainty and beautiful of head, they had the most wonderful udder development of all the breeds for their ages. The beautiful formation of

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the typical Jersey udder was plainly evidenced in even these mere babies, who came from Illinois, New York, Kentucky, Missouri, Massachusetts, Vermont, Ohio, New Jersey and Minnesota.

All during the show was heard the expression, "The East is waking up, agriculturally." That is good hearing. The foundation of all prosperity is agriculture—in sober truth "the farmer feeds them all." A farm without live stock is unthinkable, and the better the live stock the more prosperous the farmer. The class of men who attended the National, show plainly that the farmer of today works with his brain as well as his muscles, and that he is striving toward betterment. There has been much discouragement of late because of the various milk "wars" and "strikes," and this condition is not only troublesome, but dangerous. The National Dairy Show has stirred agricultural New England up mightily, though, and its influence, added to the victory of the market milk farmers who have won their hard fight for a better price just as the show closes, should be greatly beneficial. Farmers should, after this great demonstration of the dignity of their calling, take heart, and bring all their energies to bear on the problem of better agriculture; because better farming means better business, better homes, better people—everything this Nation is and has comes from its soil.

A Distinguished Arrival at Hood Farm

Sophie 19th of Hood Farm, the world's champion long-distance cow, is the proud mother of a lusty, vigorous bull calf. The calf romps and butts his mother just as though she was an ordinary cow and not the famous \$50,000 leading attraction at the recent National Dairy Show.

Mr. C. I. Hood, of Lowell, Mass., at whose farm this interesting event took place, stated at the National that he would not take \$25,000 for Sophie's offspring if it were a male.

The calf is by Sophie's Torono, and there is every likelihood that this youngster will make a mark in the dairy cattle industry that will prove him worthy of his ancestors. Sophie 19th is now twelve years of age, and will again be placed on Register of Merit test for another year's record.

Although along in years, Sophie is far from being "all in," and it would not be surprising if another big record was made during her new lactation.

Care of the Herd Bull

W. W. SWETT.

It is a well known and very true saying that "the sire is half the herd," yet this important "half" seldom receives the attention he deserves.

From birth, the bull should be given the best of care and feed in order that he may make the maximum growth and development. He should receive plenty of skim milk and grain and be treated as well, if not even better than the heifer calves.

At the age of five to six months he must be separated from the other calves. From this time on he must receive regular exercise and must be gently handled. When he is 10 to 12 months of age he may be given light service—possibly one cow every 3 or 4 weeks. From the age of 12 to 16 months this service may be increased to one cow per week.

A satisfactory feed for a mature bull is alfalfa or clover hay and a grain mixture of corn, with oats or bran. A bull must have plenty of exercise. He does not need to be housed in a warm barn

but is kept in the best condition when given a dry but open shed with a pad-dock attached so that he can go in or out at will.

Every mature bull should have a ring in his nose. There is some difference in opinion in regard to dehorning, but it is always safer to handle a bull without horns.

The following are a few don'ts which can be followed to advantage in handling a bull:

Don't underfeed him when young or keep him overfat when mature.

Don't use him too heavily before he is mature.

Don't abuse him. You can get better results by gentle but firm handling.

Don't tease him or allow children to play with him.

Don't let him get the upper hand at any time.

Don't let him realize his enormous strength.

Don't keep him confined. Give him plenty of exercise.

Don't trust ANY bull at ANY time. It is the "gentle" bull that does the damage.

Missouri College of Agriculture.

National Dairy Union

At the meeting of the National Dairy Union held in Minneapolis Nov. 14-16, in connection with the National Creamery Buttermakers' Association, Wm. T. Creasy, of Pennsylvania, was again elected secretary, with headquarters at Washington, where he can keep in close touch with all legislative matters affecting the dairy industry. Three important resolutions were passed which are indications of the way the Union is working to protect dairymen. They asked for national aid for the eradication of bovine tuberculosis; favored a division of the Bureau of Animal Industry into three parts—animal health, live stock and dairying, and reaffirmed their position in favor of state pasteurization of dairy products.

A large display of creamery butter was one of the features of the meeting. First prize went to Minnesota butter, which scored 97.5. A sample from Grove City, Pennsylvania, scored 96.25. The following officers were elected: N. P. Hull, president; H. J. Credicott, vice-president; Wm. T. Creasy, secretary; S. B. Shilling, treasurer; H. S. Johnson and S. B. Shilling, Chicago, Ill.; J. R. Morley, Owatonna, Minn.; N. P. Hull, Dimondale, Mich., and H. J. Credicott, Freeport, Ill., board of directors.

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Columbus, N. M., Feb. 23, 1916.
Wilbur Stock Food Co.,
Milwaukee, Wis.

Gentlemen:—
I herewith enclose Money Order for the trial I ordered some time ago of your famous Stock Food. I have used all kinds of stock tonic but yours surely caps them all. My horses and cows are doing fine and don't require near the feed. I have been dividing with my neighbors and they all say there is nothing like it.
W. I. HOBBS.

Dafos, Mich., March 14, 1916.
Wilbur Stock Food Co.

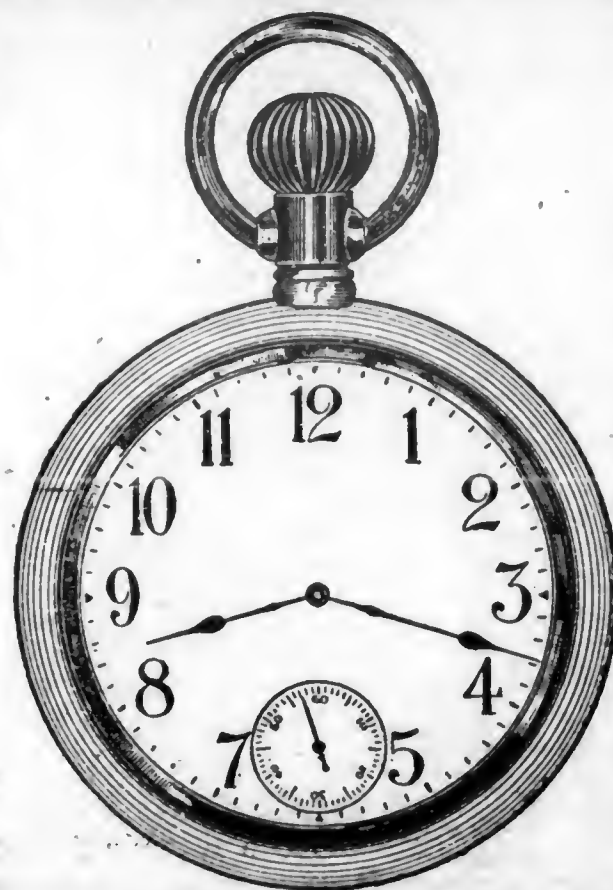
Dear Sirs:—
I have received your stock tonic two months ago today and have fed it as directed and certainly find it as recommended, even better. One of my horses and cows always run down in winter so it took nearly all summer to shed their old hair but this winter since I fed your tonic they are shedding their hair

now and are in fine condition and my poultry has done better this winter than ever. The neighbors are all surprised to see my stock, especially horses. Their hair is so sleek and glossy. I will not be without your tonic if I can get it anywhere. I recommended to all my neighbors and friends what your tonic has done for my stock.
Yours truly,
ONESIME DION.

Feb. 14, 1916.
To Whom it May Concern:—
We have used Wilbur's Stock Tonic in dairy herd and we are thoroughly satisfied with results. We find great increase in flesh, cream and flow of milk. Since we began using it, our cows are doing better on less feed. We think it superior to any other tonic.
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This beautiful special stockman's watch is as handsome a time-piece as anyone could want. It is a genuine New York Standard Watch—both case and movement being American made. It is seven full jewels, stem wind and stem set, with heavy bevelled crystal, double sunk dial, brequet hair spring, etc. The case is genuine nickel silver, handsomely engraved with a locomotive on the back. It is a watch that is specially designed to withstand a lifetime of the hardest and roughest usage and is absolutely guaranteed in every way.

To introduce MY Stock Tonic to just a thousand more readers of this paper I am going to give away one thousand magnificent Stockman's Watches—Absolutely Free—I'll send them at once—to the first thousand readers of this paper who send in the coupon below. With this watch I will also agree to send a big trial feeding of

WILBUR'S STOCK TONIC the Greatest of All Live Stock Conditioners.

What is more, I will send you this Stock Tonic with the distinct understanding that it is to be used for two whole months at my risk—that if at the end of two months feeding the Stock Tonic has not been entirely satisfactory no charge is to be made. I simply want you to make a two months' trial of my Stock Tonic with the understanding that if it does not fatten up your live stock—kill the worms—that if it has not paid you to feed it—no charge is to be made. Then as a special inducement and to pay you for the trouble in making the test I will give you—Absolutely Free—one of the Stockman's Watches shown above.

I Will Prove To You

that my Stock Tonic will positively rid your live stock of worms, fatten them up and keep them in the pink of condition. I will prove to you that you will actually get more milk from your cows, that you will fatten your hogs, steers, sheep and poultry

E. B. MARSHALL, President
Wilbur Stock Food Co., 152 Huron St., Milwaukee, Wis.
Please send me at once one of your Stockman's Watches. Also send me 100 pounds of Wilbur's Stock Tonic. I agree to feed the Tonic as directed for two months, and if it does what you claim, I will pay you in two monthly payments of only \$7.00 each. If it fails and I so report in sixty days you are to cancel the charge and I will owe you nothing. You are also to ship me—FREE—enough Wilbur's Poultry Tonic—your guaranteed egg producer—to offset all freight charges on the shipment. It is understood that the Stockman's Watch and this pair of Poultry Tonic are to be mine—Absolutely Free—whether I pay for the Stock Tonic or not.

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.....poultry. I own.....acres of land. I rent.....acres

of land. I am.....years of age.

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It is composed of Twelve separate ingredients—plainly printed on every package—each one carefully selected and absolutely pure. These ingredients are acknowledged by veterinarians everywhere to be the finest tonics, appetizers, digestive aids and worm dispellers known to medical science. Each one has a special purpose. A compound of these herbs, roots, etc., is absolutely sure to condition any animal—keep the blood clear—the system free from worms and disease and force the animal to put on fat rapidly. I have proved it so often there is no doubt about it. I have made and sold this Tonic for over thirty years and over a million of the best stock raisers in America are feeding it every day—I have thousands upon thousands of the finest kind of letters from all parts of the country telling me of the wonderful results from feeding this Stock Tonic. Now all I want to do is to show you that what it will do for others it will do for you. And as a special inducement just to get you to make this trial—at my risk—I am going to send you one of the handsome Stockman's Watches.

This Handsome Watch is Yours—FREE

It never costs you a cent. It is yours—forever—to keep and use every day—whether you ever pay for the trial feeding of Tonic or not. It's a handsome, dependable, fully guaranteed time-piece—would cost you \$6.00 to \$8.00 in any store. A watch you or any one will be proud to own, and remember, it's free.

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Value of Soil Analysis

ALVIN KEZER.

We receive a great many inquiries at the College asking us for analyses of soil samples submitted to us. This naturally brings up the question, "Of what value is a soil analysis?" The value of our work depends entirely upon circumstances—how the sample was taken, and the purpose for which it is to be used. It is impossible to take a sample of soil into the chemical laboratory and make an analysis and from the analysis tell what crops the soil ought to grow.

Every little while samples of soil come in with some such request as this: "Please analyze this soil and tell me whether it will grow peaches." Now, we know that to produce peaches, it is necessary to have certain conditions of soil, moisture, certain conditions of air, drainage and elevation. There are localities in the peach districts where peaches are successfully grown in a narrow belt at certain elevations along the sides of the valleys. Below this belt peaches cannot be grown, because they are caught by frosts at unseasonable times. Above this belt they cannot be grown, because of the shortness of the frostless season. The soil is the same in each instance.

Manifestly, we cannot tell whether the soil will grow peaches or not, without knowing local conditions.

To be able to tell what crops should grow on a soil it is necessary to know local conditions—the condition of the soil in the field, its depth, the available water supply, the slope of the land, something of how crops are behaving on the land, and what the native vegetation is in case it is virgin soil. An analysis in the laboratory will not tell these things. They are fully as important as chemical composition in determining what crops will grow. The chemical composition might be right; if the other factors are not right the land will not produce crops. Chemical composition is only one of the factors which determine crop producing power. It is for this reason that we cannot determine by analysis what a soil will produce in the field.

It is absolutely necessary for us to know local and field conditions, and whether or not the sample represents the land in question. A sample sent in might represent an area of ten square feet, and that ten square feet might be different from all the rest of the farm.

When all other factors are known, a soil analysis is valuable in determining the agricultural practices which must be followed. It is also valuable in the case of determining certain alkalies, thus helping with information necessary for the control of such troubles. For determining what kind of crops must be grown it is of no direct service whatever.

Colorado Agri. College.

Pennsylvania Wool Show

One of the big features of the Pennsylvania Corn, Fruit, Dairy Products, Vegetable and Wool Show which will be held at Harrisburg on January 22, 23, 24, 25 and 26, will be the exhibit of wool which is being arranged by the Pennsylvania Sheep Breeders' and Wool Growers' Association.

Hundreds of fleeces of various kinds are expected to be placed on exhibition in the wool section of the show and valuable prizes are to be offered. In judging the wool the general condition, shrinkage, and market value of the fleeces are to be considered. All fleeces are to be tied with a twine of smooth surface.

The Pennsylvania Department of Agriculture for the past year has been advocating the raising of more sheep by

the farmers of the state and the movement sponsored by Secretary of Agriculture Charles E. Patton, is bringing splendid results, despite the high price of ewes. Sheep breeders will be in attendance at the show and much valuable advice will be available to the farmer considering sheep raising.

The classes and prizes for the wool exhibit are:

Class A—Full blooded Merino, fleece to be combing staple. 1st prize, \$10.00; 2nd prize, \$7.00; 3rd prize, \$5.00.

Class B—Crossbred Wool, sub-divided into four classes as follows:

1— $\frac{1}{2}$ Blood Wool, 1st prize, \$10.00; 2nd prize, \$7.00.

2— $\frac{3}{4}$ Blood Wool, 1st prize, \$10.00; 2nd prize, \$7.00; 3rd prize, \$5.00.

3— $\frac{1}{4}$ Blood Wool, 1st prize, \$10.00; 2nd prize, \$7.00; 3rd prize, \$5.00.

4—Braid Wool, 1st prize, \$10.00; 2nd prize, \$7.00.

Class C—Rams' Fleece—Best Ram's Fleece, Pure-Bred Merino, combing staple, prize, \$5.00.

Class D—Rams' Fleece—Best Ram's Fleece, Pure-Bred Mutton Type, combing staple, prize, \$5.00.

Recommendations of Sheep Conference

At the sheep conference held in Philadelphia under the auspices of the Philadelphia Wool and Textile Association the chairman, Mr. A. C. Bigelow, president of the association, was instructed by vote of the delegates to appoint a committee of five to continue the work started at that time. The idea is to establish a bureau, for the development of the sheep industry, to be financed by the wool and textile manufacturing trades. The addresses delivered at the two days conference by the various interests brought out different phases of the industry. The resolution committee embodied these ideas into eleven recommendations, which were made as objects to be worked for by the new development bureau:

1. Immediate conservation of breeding flocks.

2. Increase in the number of farm flocks.

3. Survey of the location and the number and the price of breeding sheep for establishing and improving flocks.

4. Enactment and enforcement of adequate dog laws.

5. Encouragement and support of farmers' co-operative and club sales of wool and lambs.

6. Encouragement of buying methods which will guarantee to the individual grower and producer the true market value of his products and instruct him as to market requirements.

7. Preparation and distribution of clearly written bulletins and similar matter on the production and marketing of wool and mutton.

8. Local business interests in various counties to be stimulated to aid in the establishment of county farm bureaus.

9. Encourage the formation of boys' and girls' lamb clubs.

10. Encouragement of close relations between, and appreciation of, the mutual interdependence of town and country.

11. National publicity as to the wholesomeness and economy of mutton and lamb.

It will be noted that recommendations 5, 6 and 7 concern the wool and textile trade. The Conference was conducted without limiting the scope of the discussion, and when a jolt was handed the wool men it was taken in the proper spirit. President Bigelow said that if the methods of marketing wool could be improved upon the wool trade ought to know and wants to know it.

Money Saving Opportunities

We have made up a list of magazines and newspapers, which we offer in combination with The Practical Farmer at a reduced price for the two publications. We believe they are the best that can be selected for the farmer and his family. We cannot send sample copies of any of these publications; they must be secured from the office of each. These offers are only good for subscriptions in the United States, Hawaii and the Philippine Islands. The first column of figures gives the price of the publication named and the far column of figures the combined price of The Practical Farmer for three years and the publication named for one year.

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A TWICE-A-MONTH JOURNAL of practical, every-day experience for, and by, men and women who take their living from the soil.

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The Practical Farmer

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Number 24

The Tractor on a Hundred-Acre Farm

By STEPHEN M. TRIMBLE

OUR farm of one hundred acres is situated in southeastern Pennsylvania, on the outskirts of a city which, during the present European war, has become a great munition center. The agents for the munition plants often come to the farm trying to induce our men to leave and we are constantly competing with them for labor. In several cases we have had to pay \$3.00 for 10 hours work. We have a silo for our thirty-five cows, use milking machines, have track carriers in barn and use manure spreader, have a hay loader and numerous other labor saving machines, but it was necessary this year that we find still other ways of getting greater efficiency from our small and high priced labor supply. We have developed a quarry in one corner of the farm, and during the busy crushing season last March our steam engine broke down. In considering a cheaper and more efficient power for this work the ordinary gasoline engine came to mind, but the high cost of gas and the difficulty we would have in moving the engine from place to place for other work made us turn our attention to farm tractors. There were only two tractors in this vicinity at that time, so we could not do much personal investigation. We finally decided on a one-cylinder type, slow speed motor, hopper cooled and of fairly light weight (5,400 pounds). The fact that we could get repairs from the warehouse in about an hour by automobile, its simplicity of design, its ability to work on low grade oils, such as kerosene, its light weight and having four wheels so that it won't skid in clay soil were all points in its favor.

The tractor was sold to us on a written guarantee that running on kerosene it would crush 90 tons of trap rock in ten hours with our equipment. In seven timed tests it actually handled 18 tons in an hour, but this was faster than we could ordinarily put the stone in the crusher and take it away, so that about 11 tons an hour is our working average.

In an eleven-hour test of two shifts crushing stone, five and six hours each, the tractor used 26 gallons of kerosene costing 9 cents a gallon, a total of \$2.34, one quart of gasoline for starting at 5 cents, one and one-half gallons lubricating oil costing 65 cents, and three-quarters pound of cup grease costing 3 cents, making a total of \$3.07. One hour's care was required for oiling, adjusting, etc., charged at 25 cents. Depreciation and rent of storage space we figure

amount to about 50 cents per day, so adding all these the eleven hours' work cost \$3.82 for power to belt, or a little more than 3 cents for each ton crushed. This is cheaper than the steam cost used to be, and we also save the services of a regular engineer, as the man who has charge of the tractor feeds the crusher and we do not have the expense of hauling coal and water.

Spring plowing time found us not only short of men, but short of horses, so we set the tractor to work. We plowed 17 acres on the home place and 20 acres on the upper farm, eight miles distant. We used a two-bottom plow which could be worked from the tractor seat, so that one man did the job. We figured that it cost \$2.86 for the machine to work nine hours and plow a fraction over four acres. Allowing \$2.50 as the labor cost for a day, this means that it cost us \$1.34 to plow an acre. Most of the land is level on the

lower farm, but on the upper one there are hills and "niggerheads," so that it was a little harder plowing, but by using the wooden safety peg we had little trouble. When turning a furrow toward the fence we can make the outside mold-board touch the posts and only have to leave two furrows when throwing the soil away from the fence. We can turn corners short enough to upset a hay wagon.

This summer we harvested 18 acres of good hay without touching it by hand except pitching off the wagon what the hay fork left and keeping the load level as the hay was delivered to it.

We hooked the tractor, a wagon and rake loader

except two stops to fix the knottor on the binder.

The place where the tractor pleased us most of all was cutting our corn and filling the silo. A neighbor has a tractor just like ours, so we hired it for five dollars a day to run our 13-inch cutter and 30-foot blower. The cost of operating it was nearly the same as when we crushed stone, as we handled about seven tons of green corn an hour for a nine-hour day. Last year we had 14 men at \$2.00 per day and their board, coal for engine, horse and boy to haul water and engine at one dollar per hour, including engineer. This year we did the same job with seven men and two tractors. We bought a corn harvester with loader attachment and hooked our tractor to it. This cut the

corn, tied it into bundles and delivered it on to the wagon which was driven alongside. This required only one man to cut and load the corn, whereas last year we had three cutters and four loaders at \$2.00 per day and board for each. We had the same number of teams in both cases, but we traded teams with a neighbor, so did not figure on this cost.

One of our neighbors, H. R. Burr, who operates a hundred and fifty acre farm connected with a boys' school, has had considerable experience with tractors for a great variety of jobs. He, by the way, is going to present a paper at the meeting of the American Society of Agricultural Engineers in Chicago, December 28th, on "Use of the Tractor on Eastern Farms." Mr. Burr figures that it costs \$1.94 to plow an acre with their tractor. The fuel for the acre cost 94 cents, four gallons of gasoline at 21 cents and one quart of lubricating oil at 10 cents. It required two hours time of operator, which, at 30 cents an hour, would amount to 60 cents. Basing his figures on the results of plowing about 200 acres, he estimates that the wear on plow and engine, including repairs and plowshares, amounts to 40 cents an acre, making the total \$1.94.

For two seasons Mr. Burr has farmed 50 acres of additional cultivated land without purchasing additional horses; in fact, this spring they lost one by sickness. He not only uses the tractor for plowing, but for harrowing, drilling grain, spreading manure, loading and hauling hay to barn, moving colony houses, road grading, filling silo, and all kinds of belt work. He figures that the tractor will deliver from 15 to 20 H. P. on the belt for ten hours for about \$3.10, including fuel, oil and depreciation, or at the rate of about 2 to 3 cents per H. P. per hour. His machine is a 10-20 4-cylinder, water cooled, gasoline type, and while it costs more to operate than ours, it moves quicker, being able to go four miles an hour when pulling a light load.

From the mechanical standpoint we find the tractor not difficult to operate and easy to care for and keep in order. It requires about a half hour a day when in use, to fill with oil and grease. When it is not working there is no feed or care required. When a man and team are worth \$6.00 a day for outside jobs, as they are in our vicinity, the tractor proved to be the most economical proposition we have undertaken, even beating the milking machine. It might seem that a 4-cylinder motor would be preferable to ours, as it would give more even pull and less vibration. On the other hand, it would mean more valves to grind and

(Concluded on page 457)



The Tractor Has Come to Stay in the East

The Practical Farmer

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DECEMBER 15, 1916

The Farm Tractor

THE tractor as part of the equipment of the Eastern farm is fast becoming a reality. It has sifted down to a question of adaptability, same as the milking machine went through a lot of evolutions after the first one was made, until today it can adapt itself to all cow conditions. Tractor manufacturers themselves admit that the industry is developing so fast that information more than two years old is of little value today. The Eastern farmer has a different problem from the Western man who uses a tractor to pull three binders, followed by a 14-bottom plow. A tractor which will not cost much to buy, run or keep, and will turn short corners, work on a side-hill and be suitable for a variety of uses, is demanded, and the manufacturers are meeting the demand. Estimates gathered from various sources show that there were more than 200,000 farm tractors manufactured during 1915.

In the East labor conditions and the high cost of keeping horses have caused lots of farmers to seriously study the tractor problem. It costs from \$50 to \$100 a year to keep each farm horse, and it won't average five hours labor for each working day. Tractors, on the other hand, only need feed when they work, and they can be worked 24 hours each day if need be. On another page we are giving the tractor experiences of a man who is working the same farm which his father and grandfather did, but he is meeting and solving economic problems which never bothered them.

It is not expected that tractors will make horses useless on the Eastern farm. There will always be certain work which a tractor cannot do. Its place will be to do the heavy work and make it possible to keep only enough horses to do the tractorless jobs, and not the number required at the rush seasons. Count your investment in these "extra" horses, then figure on the cost to keep them and see how this compares with the cost of a tractor, not failing to take into consideration the amount and variety of work which a tractor can do and how it will save the team you do keep.

A Preventable Farm Waste

WHEN making a comprehensive survey of the meat situation in the United States two years ago, the Department of Agriculture reported that the loss in grain straw and corn stover amounts to more than one hundred million dollars annually. They found that there are approximately 245,000,000 tons of corn stover, which is twice the amount of grain straw, produced in a year. A large portion, 81½ per cent. of it, is fed to animals, but even the waste of this due to poor feeding methods is astonishing. It has been proven beyond a doubt that the most economical and profitable way of handling the corn crop where it is to be fed on the farm is through the silo. During

1914, however, the year when these investigations were made, it appeared that only 8.1 per cent. of the total corn crop was disposed of in this way. About 11 per cent. of it was cut and fed green and 81 per cent. was allowed to mature for grain. The greatest waste of food value occurred in the latter case. Four per cent. of the total stover produced is still consumed by burning to get it out of the way.

Several new ideas as to saving and feeding this valuable roughage are presented by our contributors in the Experience Pool of this issue and are well worth the study of every reader. Feeding it to live stock in connection with concentrates undoubtedly gives the best returns. Two tons of well cared for corn stover are said to be equal in feeding value to one ton of timothy hay, and experiment station records show 37 per cent. of the nutritive value of the corn plant is in the stover.

Along with the general spirit of conservation let us make an effort to get a silo for best returns from the corn crop.

"Safety First"—Plan Ahead

HAS it occurred to you that the unprecedented freight congestion which exists today on the railroads of the United States and which seems to be getting worse each day instead of better, might seriously strike home to you? If it has been your custom to delay ordering supplies of fertilizers, lime, lumber, spraying material, machinery, etc., until only a few weeks before you need them, this year it might cause you serious loss. The sooner your orders for all these materials are in the hands of the manufacturers the better your chances for having them when you need them. Of course, we realize that in some cases, on account of bad roads and weather conditions it will not be possible to haul this class of material to the farm before spring. On the other hand, there are lots of farmers who are so situated that they can haul supplies during the winter at a great saving. In any case, wouldn't it be a good plan to talk this matter over with your local dealers and freight agents, and see what they think of the railroad situation and bear in mind what even one day lost in the spring will mean to you when you want to get things started. Wise manufacturers and merchants are planning and ordering further ahead this season than ever before, and the wise farmer will not overlook this fact. Prices on most merchandise, machinery and supplies will increase rather than decrease between now and spring.

Sheep Conference

REALIZING that there is more than one side to every question, and not pretending that all the benefits from increased production are to be reaped by the farmers, on November 23-24 there was held in Philadelphia, under the auspices of the Philadelphia Wool and Textile Association, a conference to consider ways and means of building up the sheep industry in the United States. This meeting was attended by representatives from a number of organizations in the eastern part of the United States. Among these were the sheep breeders, departments of agriculture, agricultural colleges, wool dealers, manufacturers of woolen goods, railroads, agricultural press and others interested in the industry. As is usually the case at a conference of this kind, the various phases of the sheep industry were discussed. It was the consensus of opinion that the cur dog has done much to reduce the number of sheep on the farms in the East and that adequate dog legislation will be necessary to protect the sheep owners. Staple and permanent markets were considered essential in again building up the sheep industry in this country. There seems to be no question but that sufficient interest in sheep husbandry has been created among farmers on account of the high prices of lambs and wool that prevail at present. If farmers can be assured a permanent market on which these products can be disposed at a profit they will develop flocks of sheep on their farms. The local buying of lambs and wool on the merit basis was also regarded as an important factor in improving the quality of lambs produced and the wool prepared for market.

The value of a conference of this kind cannot be measured in dollars and cents. It is bound to result in some good and in this case it is a clearer understanding between the producers and the manufacturer. The points brought out should make it clear to the manufacturer that the producer has a number of important problems to solve and that there are many drawbacks in the production of the raw material. If the conference has brought the manufacturer

and the producer of raw material closer together, so as to understand the problems of one another, the conference was well worth while.

The entire proceedings of this conference will be printed in pamphlet form for free distribution to those interested. In another part of this issue we are printing one side of the problem as presented by W. H. Tomhave, of Pennsylvania State College, and also the eleven recommendations as objects to be worked for by the new development bureau.

Whose Turn is it this Time?

SURELY your farm will be represented this winter at the annual Farmers' Week at your state agricultural college. This idea, which started in Wisconsin, aims to arouse the interest of busy and practical farm people by showing and demonstrating to them for a few days the vital points affecting their business rather than by sending out printed bulletins which often fail to reach the people they are intended for. Not only are all facilities of the agricultural college available to those who attend these meetings, but the contact with hundreds of other people who are working along the same lines and meeting the same problems makes the time spent in attending even a few days well worth the effort. Lectures and demonstrations covering every line of agriculture are given and are so arranged that it is possible to attend only those in which you are most interested; in fact, the greatest difficulty is to avoid missing the good ones, so many are given simultaneously.

Complete series of lectures are also given along subjects of interest to women, and in many cases husband and wife both can take a week vacation and come back with a different attitude toward home problems after seeing and hearing how others overcome the same difficulties.

Pennsylvania Farmers' Week is always arranged for the Christmas vacation, this year occurring from December 27th to January 3rd, so that not only will all the college facilities be available, but the son or daughter will be at home and father or mother or both can go to the college, taking their places, and know that the work at home will not be neglected.

The fifth annual Farmers' Week at Ohio State University will be held January 29th to February 2nd, 1917. At Cornell, the New York State College of Agriculture, Farmers' Week is from February 12 to 17. West Virginia will have its annual Farmers' Week at Morgantown, January 1 to 8.

There is no charge for tuition at any of the Farmers' Weeks, and as the railroads grant special rates the cost is nominal. Would it not be well to send a postal to your state college asking about their Farmers' Week this year, and then plan to attend? If you attend once you will surely become one of the regulars, or at least want some one in your family to enjoy the benefits.

National Farm Loan Association

AFTER having hearings in every state in the Union the Federal Farm Loan Board has returned to Washington ready to put into practice the ideas obtained. The blank forms to be used in organizing the national farm loan associations under the provisions of the Federal Farm Loan Act are now ready for distribution to any one who asks the Loan Board, Treasury Department, Washington, D. C., for them. After receiving the forms it is necessary to call a meeting of the prospective members of your association, adopt these articles and have each member sign and acknowledge them.

At your first meeting, elect a board of five or more directors and have the directors meet and elect a president, a vice-president, a secretary-treasurer, and a loan committee of three members. The loan committee may begin at once to value the lands of the members and prepare its written report of these valuations, which must be unanimous.

Do not send the signed articles of associations to Washington, but hold them until the Federal land bank of your district is located. Then write to the bank asking for forms which include an application for a charter. When these come, fill them out and send them, together with the articles of association and the report of the loan committee, to your Federal land bank.

Each association represents a minimum of \$20,000 worth of loans. From the interest already taken the Farm Loan Board assumes that this new co-operative banking system will have from the date of its installation a volume of business that will insure its operation at a minimum overhead expense.

December 15, 1916.

THE PRACTICAL FARMER

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The Value of Honey Bees in the Orchard

By JOHN W. LOVE

Time was when the keeper of bees had to be on his guard against the attacks of fruit and grape growers. At any time in the late summer he might be summoned to show why he should not pay damages for fruit destroyed by his bees, or if he lived in town, he might find the local council had suddenly outlawed his bees by ordinance, like so many hogs, on the ground that they were a nuisance.

"How do we know that the bees eat our fruit? Why, can't we see 'em sitting on the fruit, sucking the juice out?" And it was always hard, and often still is, to convince these irate neighbors that the bees absolutely cannot puncture the skins of sound fruit. Their jaws are not made that way. They will starve in the presence of sound fruit. The U. S. Department of Agriculture has declared them not guilty, and so has every court before which cases have come. The fault lies with the birds which puncture the skins in the first place, and not with the industrious insects which can only get the juice after an opening has been made by some other agency.

During the past century scientific investigation and now progressive fruit growers have come to take the opposite view—that instead of being a nuisance the presence of bees is really necessary for perfect fruit. Somehow the prejudice against bees has grown up right alongside the realization that they are necessary to pollinate the blossoms, and it will probably be some time yet before everybody appreciates the value of bees.

Before the seed in a blossom can set, it is necessary for pollen from the stamen to reach the tiny ovule at the base of the pistil. This is a fundamental fact in nearly all plant life. Most of us were taught in school that this process takes place within the flower, that the blossom itself is able to perform the whole function, or, in a way, generate spontaneously. But now horticultural experts have shown that with a great many, and especially with most of the best varieties of apples, peaches and pears, the pollen must be interchanged between blossom and blossom, and even between one variety and another, before large, vigorous and well developed fruit will be produced.

The bees are carriers of this fertilizing pollen from one blossom to another. Their search for nectar in the blossoms at a time when there are no other important sources of nectar available takes them from one blossom to another. The nectar is placed so far down in the flower that the bee, in reaching after it, cannot help dusting itself over with the pollen grains. Then on approaching the nectary of the next blossom it enters, some of the pollen catches on the sticky end of the pistil as the bee goes by.

The wind is often relied upon to carry the pollen from one blossom to another, but experiments have shown conclusively that in the case of many hardy fruits the wind is of little, if any, value. Prof. M. B. Waite of the Department of Agriculture could not find that the wind had any effect in the pollination of pear blossoms covered with wire netting. Prof. F. A. Waugh covered whole plum trees with netting and showed that the wind has no measurable effect.

The enormous numbers of common honey bees at a time of the year when other insects have not recovered from the winter are what fit them for this work. Pollination of blossoms is sometimes accomplished by flies, wasps and wild bees, but their forces are never large during fruit bloom. Besides, their numbers have been cut down by methods of clean cultivation, pruning and spray-

ing. But where man has massed a great number of fruit trees, he must also mass the insects, as Prof. B. N. Gates, of Amherst, Mass., has pointed out. This he can easiest do simply by setting hives of bees in the orchard. According to the Department of Agriculture, bulletin entitled "The Pollination of Pear Flowers" (Waite): "The common honey bee is the most regular, important and abundant visitor, and probably does more good than any other species."

The honey bee has been found of importance in the setting of the apple, pear, peach, plum, quince, raspberry, blackberry, grape, squash, melon, cucumber and cranberry. Among those plants which grow in semi-tropical climates, the citrus fruits and coffee require the service of the bee.

The apple is composed of five fruits united into one, each with its own seed. You have all picked up apples in which one or more of the embryonic seeds failed of pollination and have noticed the resulting depression in the side of the apple. Malformed apples seldom hang on the limbs long enough to ripen. Such imperfect pollination as this can be avoided by insuring that there are enough bees to reach every blossom.

One of the most striking examples of the effect of complete absence of bees on an orchard was furnished in the West some years ago. The trees were located in a pocket among the hills where every condition seemed to be favorable. No fruit would mature. Experts from the experiment station puzzled over the proposition for a long time without result. By chance bees were observed in a similarly situated orchard which had always given good crops. Colonies were introduced into the hitherto barren orchard and the next year the owner secured a normal yield.

Repp Brothers, extensive New Jersey fruit growers, find they cannot get along without bees in their 450 acres of fruit trees. They have built up a good sized apiary without regard to the honey they could get from the colonies; all asked is that they pollinate blossoms.

A variety of experiments have been conducted with plums. Prof. Waugh made experiments in Vermont and Maryland with sixty varieties, enclosing the blossoms in paper bags and then pollinating them with their own pollen. He found all sixty self-sterile for all practical purposes; in other words, fruit of one variety would not set unless pollinated by another variety. In plum orchards not only is it necessary to have bees at work, but the trees should be planted in such an arrangement that cross-fertilization will be possible.

Far from being a damage to grapes, the presence of bees is necessary for the pollination of certain varieties, such as the Muscadines. The North Carolina Experiment Station recommends that every effort be made to encourage bees. "It is very evident from our results that

The Little Chick Business as a First Aid to the Beginner

By MRS. C. C. DOORLY

In their plans for the coming spring struggle to get a good foothold on the land in a new locality, would-be small farmers will never lose in taking into their calculations for a well settled neighborhood, the possibilities for immediate and sure money to be had by raising little chicks for sale. It requires small capital in stock and equipment at first, and if the work is conscientiously done, early and grateful returns may be counted on. A dozen or so setting hens, and, as you decide the extent of your operations, a couple of hundred or so of first-class pure-bred stock hatching eggs, a clean place, watchful care, and in time you can count your money. It is astonishing in many country places how many people still, with opportunity staring

at them, fail to take advantage of it. These may be added later, as the business grows. A popular and practical price for the chicks is 10 to 12 cents for the Leghorns, and 12 to 18 cents for the heavier breeds, such as Rhode Island Reds, Barred Plymouth Rocks or Orpingtons. Study up the neighborhood preference a bit first; it is generally a good plan to hatch two kinds, an egg laying breed and the meat sort. If trade is a "bit slow," an ad. in your local sheet or farm paper will more than likely prove a stimulator, at small cost.

Sell them off as soon as hatched, if you can, and keep more coming all the time. The earliest ones, of course, fetch the most, and of these a fair percentage, no matter what the temptation to sell, should be kept for your own future flock. A good sitter can be set twice (we have set them three times, in case of need, without apparent damage in any way). One big, motherly hen will handle the hatch of two or even three, a lot depending on the weather conditions. This is as we have handled it and made it help us greatly. Of course, there are improvements, and perhaps other, better ways. Certainly it is up to each one of us to thoroughly try out this matter, where the results, the demand and pay are almost certain. It is rather easy for "greenhorns," too, in comparison with some other things with which they generally strive to make those first few badly needed early pennies. Try it, and I think you will find that it will pay you better than selling those spring eggs at low price. And as to the need for egg food for yourselves, later you can have eggs aplenty. The little chick money will bring you groceries and pay your rent, buy tools, seed, etc., if well managed. We have done, and expect to keep on doing it. But you must love the work.

New Jersey.

The Tractor on a Hundred-Acre Farm

(Concluded from page 455)

more bearings to wear and get out of order and more carbon to remove. As a horse saver we find it difficult to estimate the value of our tractor. For instance, pulling stumps or the well drilled out of a bad place are jobs we could not hook horses to direct. Our plowing saved six horses and two men, as one man did the two jobs at one time. It seems to us that for a fairly level hundred acre farm, a tractor, a team of good horses and an automobile are all the motive power necessary.

That these conditions are being realized by farmers is shown by the fact that the Pennsylvania State Department of Agriculture recently estimated that there are now 540 tractors in use on the farms of this state.

at least one hive of bees should be kept where any large number of vines are grown."

Two of the most important varieties of pear, the Kieffer and Bartlett, have been found self-sterile. (?) Nearly all others are similarly unable to set fruit without the pollen of other varieties. Cherries seem to be a little more independent in this respect, although it is always well to avoid planting in solid blocks, and to make provision for the pollination. Citrus growers in Florida and Porto Rico are awaking to the necessity of providing for pollination. Where bees are not already in the vicinity, beekeepers are frequently given free rental

of apiary sites in or near the groves. All investigations agree that the fruit resulting from crossing, even in those varieties which will set fruit from their own pollen, is larger, better developed, more brilliantly colored, luscious and sweet, than when self-fertilized. If this is true, therefore, it is all the same to the fruit grower who insists upon top-notch quality in his product. To him the dangers of inadequate pollination need cause no concern provided he has the means of avoiding them. His aim is marketable fruit, however it is pollinated, and since the presence of bees means better fruit he takes care that bees are present.



New Jersey Combination of Bees and Fruit

THE GARDEN

Edited by W. F. MASSEY
All articles for, or questions relating to this department should be addressed "The Garden," The Practical Farmer, Philadelphia, Pa.

Suggested Tomato Varieties

I have always been interested in the tomato. Ever since the introduction of the Trophy, when I paid Col. Waring \$5 for 20 seeds 40 years ago, I have been testing the new ones as they came out. The Trophy was really the first smooth and solid interior tomato. We had had before that smooth tomatoes, but hollow inside, and solid tomatoes with a very rough form externally, but the Trophy was the first to get the solid and rough tomato inside a smooth skin. From its introduction down to the present the varieties introduced have been almost innumerable. We now have so many equally good that the amateur is puzzled by the array of names in the catalogues. Many of them are so much alike that the list of names might be greatly abbreviated, and should be, for a very short list will include all the desirable qualities. For red tomatoes one who starts in the home garden with Bonny Best as the early, and then Success, Matchless and Improved Stone will have all that he could get in a longer list. Then if he wants the pink tomatoes the old Beauty is good and the Globe is the best. These varieties will give the cream of the long list of tomatoes. Of course, the market grower will use a good strain of Earliana for the earliest, as it throws its whole crop early, but the home gardener wants better quality and can afford to wait a few days for better tomatoes.

Every season tomatoes are brought out claiming to be earlier than any other, but after many years testing of the new ones I have not found any earlier than a good strain of the Earliana. The Bonny Best is very little later, and for the family garden is superior to the Earliana, being a more solid and meaty fruit and keeping in bearing longer than Earliana. The Earliana is valuable to the market grower, because it throws its whole crop early when the tomatoes are bringing the best price.

Irish Potatoes

The Irish potato now most commonly grown for the early crop is the Irish Cobbler. The great difficulty for some years has been to find a pure stock, for most of the stocks sold are more or less mixed.

A Norfolk seedsman offers a stock called Beauty, which has proved earlier than the common stock of Cobbler and is more like the original Quick Lunch. Much has often been said about the running out of varieties. I can see no reason why a variety should run out and become unproductive if care is used in the selection of the seed. Weak plants of any kind make weak products, and the indiscriminate planting of all will tend to run down any plant. Careful selection of seed has done wonders for many of our cultivated plants and there is no reason why it should not increase rather than diminish the value of the potato. A study of different hills of potatoes will show a great difference in the productivity of many of them. A hill showing few potatoes, even if they are large, will indicate an unproductive plant. Many years ago I dug a hill of potatoes containing nearly forty tubers; most of them, of course, were small, but there were a number of fair sized potatoes. That hill used for seed maintained its productive character, making numerous potatoes, a large proportion of which

were of marketable size and the product in general was an advance in the variety. For seed selection I would far rather take a hill that makes a large number of tubers even if most of them are small, than a hill that made two or three big potatoes, indicating a scanty product. Just as we save corn by field selection, the time for making the selection of potatoes for seed is at the digging time. Note hill after hill and put aside the hills that make a large number of tubers. Get the productive character and then by good cultivation look after the product in marketable size. Annual selection from the most productive hills will do as much for the potato as the selection of corn ears.

It has been abundantly proven by experiments at the Southern experiment station that the Southern growers can produce the best seed for their early planting by growing a late crop from cold storage seed for the spring planting. The prevalence of the stem rot in Maine, and the risk of powdery mildew, have made the production of seed potatoes in the South an important matter. The North Carolina Station found by several years test that the late crop grown there made seed that largely outyielded the seed brought from Maine, and was clear of disease that has lessened the value of the Maine seed. In the Norfolk section I saw two fields of potatoes side by side; one was from Maine seed and the other from the late fall crop grown in Kentucky. The first field was badly infested with the black stem disease, while the latter was dark green in color and very healthy. The Irish Cobbler is far inferior to the old Early Rose and Early Ohio, and I believe that by careful selection the Early Rose can be brought back to its old productivity. This is work for the experiment stations, and they can do much for the potato growers by investigations in the selection and improvement of seed potatoes.

Growing Cabbage Plants

South of Baltimore the early cabbage plants can still be set in open furrows as heretofore advised. Cabbage plants that are being wintered in cold frames should be exposed at every opportunity to keep them dormant. A temperature of 25 degrees above zero will do them no harm if the plants are set deeply in the frames, but in very cold weather they may need some cover on the sashes in the northern part of our territory. The object in carrying fall-sown cabbage and cauliflower plants over in frames is to keep them alive, but not to encourage a growth that would make them tender.

In most places where it is too cold to set cabbage plants out in the fall it will be better to sow the seed in a frame or hothed in February and grow the plants for spring setting. Plants grown in this way will never run to seed, as the fall plants sometimes do.

Use of Mulch

In my garden I mulch everything with manure. I put it between the rows of onions, parsnips, salsify, spinach, leeks, etc., and though these are all hardy here they are bettered by the manure and it prevents too hard freezing for us to get them out of the soil at any time, though here our soil is open more than frozen. The beds where the flowering bulbs of tulips, hyacinths and narcissus were

planted will now be greatly helped by a thick cover of stable manure. The rough portion should be raked off in spring when the bulbs begin to show above ground. While all of these bulbs may be injured by manure in the soil in contact with the bulbs, they are all helped greatly by the manure mulch on top.

Crops like spinach will be much safer with a heavy mulch of manure between the rows. Lettuce in cold frames will need mats or other cover on very cold nights. Violets in frames will also be bettered by covering the sashes on cold nights.

Horse-Radish

If you planted the cuttings of the horse-radish roots last spring, now is the time to lift and trim them. Never leave a plant of horse-radish over one season in the ground, for the roots will depreciate in value. Dig them now and trim off the side roots, cutting the top square across and the lower end sloping. This will enable you in the spring to tell top from bottom. Tie in bundles and bury in the garden till spring.

The trimmed roots should be disposed of at once or buried in the ground and mulched so that they can be gotten out as needed for family use, but do not keep them out of the ground as they will wilt. Where only a few are grown for home use it is better to clean and grind the roots and put them in glass jars with vinegar to keep them, and any surplus may be readily disposed of.

Rhubarb During Winter

Large roots of rhubarb can be taken up after there has been some good freezing, packed on the floor of a warm cellar and covered with earth so they can be forced and make long pink stalks. I formerly did this, but now-days we save this waste of the roots. We cut a lot of the stalks in summer and cut them in small pieces and fill fruit jars with them and then fill up with cold water and fasten the top down tight, and the rhubarb keeps well all winter and can be had for cooking at any time. It kept in this way last winter till fresh stalks were ready in spring.

Garden Gossip

The pretty catalogues of the seedsmen will soon be coming in. Many of them are very good guides as to the planting and cultivation of the various vegetables. All of them will probably be offering new varieties. Some of these may stick and become standard, while others will soon drop out. It is interesting for the gardener to try some of the new things, for at times he may get something valuable, but never stake your crop of any vegetables on the novelties. Try them in a small way, but depend for your crop on the standard sorts that have been proved good.

All the seed catalogues will have an extra early pea that they claim to be ahead of any other. The fact is that all the extra early peas now sold are of the Alaska type. Some may have been better rogued than others, but they are all from the same original stock.

The Black Beauty eggplant is earlier than most others, but starts very weakly and it is hard to get large, strong plants for setting, though it grows off finely after it is in the open ground, and is very productive. The New York Improved Spineless grows off far more strongly in the seed flats, and makes a larger plant than the Black Beauty, and

larger fruits, but not as large a crop. It is well to grow some of both.

In past seasons I have been in the habit of starting some sweet peppers at the same time I sow my eggplant seed, so as to have some early ones, and later sow some in an outdoor seedbed for the late pickling crop. But with the advent of the Pimiento, or Glory Pepper, as some call it, I find that the early plants will grow and bear all through from early summer until frost, and there is no need of a second sowing.

In planting peppers avoid setting the sweet peppers near the hot ones, for they will get hot even the same season, as I found once by setting the hot Tobacco pepper alongside my sweet ones, and all were hot.

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HORTICULTURE

Edited by C. A. McCUE

The Home Orchard

Thirty years ago the home orchard produced the bulk of the fruit marketed in the United States. Perhaps we ought rather to say the farm orchard. Then practically every farm had a small orchard, especially apple trees. The trees produced more than enough fruit for the family needs and the surplus was sold. In the North every cellar had its bins of red-cheeked apples with which the farmer and his family whiled away many a long winter evening. We can remember as a boy how we would take a milk pan and go into the cellar and fill it with Baldwin, Greenings, Spys, Seek-no-Furthers, Kings and Wageners. We had no Ben Davis for home consumption. How many farmer boys are able to do that today?

The farm orchard was a potent factor in the home life. The fruit grew freely, scale was unknown and scab, codling moth and the numerous other pests of the fruit grower today, caused but little concern thirty years ago. Then came the influx of orchard pests, the scale, the scab, the brown rot, the black knot, the aphids, and a legion of troubles and the farmer had to spray or go without good fruit. The scale in particular was greatly responsible for the decline of the farm orchard. Many sturdy trees were killed outright, and others hopelessly ruined before a remedy was discovered.

Most of these small home orchards were merely adjuncts to the general farm, and when it came to the demands of modern spraying the general farmer either felt that he did not know how, or he was too busy with other things "to fool with spraying." He said it was "too much bother," and as a result the influence of the home orchard, in the home life and upon the fruit markets, began to decline.

Fruit growing has passed from the day of the home to the day of the commercial orchardist. The commercial orchardist would rather that the home orchard did not put its product upon the market. In years of bumper fruit crops the home orchard product invades the market and it is usually of an inferior grade, and the effect of wholesale dumping of poor class fruit upon an already overloaded market demoralizes prices and makes a disastrous season for every one connected with the fruit trade. We had a striking example of this in the peach market in 1915.

There are two views that may be taken of the home orchard situation. First the economic view, and second the feeling of satisfaction in the home life. Years ago our grandfathers raised sheep and our grandmothers took the wool and spun it into yarn and cloth, and with other things the farm was an economic unit sufficient unto itself. Now all this is changed, we no longer card and spin our own cloth and yarn upon the farm. We have found it cheaper and more satisfactory to buy many things. The farm is not the independent unit it once was. It has become cheaper to buy from a specialist, and we usually secure better quality. So it may be said of fruits. The ordinary farmer can better devote his time and his thought to other farm operations that he is more vitally interested in. From the standpoint of quality and cost of production he can buy high grade fruit from fruit growing specialists cheaper than he can produce it himself. Viewed from a strictly business standpoint, the ordinary home orchard rightly handled is

a costly proposition. Not every owner of a farm is temperamentally fitted to grow fruit; he is oftener, and rightly so, more interested in corn, wheat, hay, cattle or milk production. To be efficient in these things he must give the best of his thought and effort to these occupations. The man who succeeds with fruit, be he either amateur or professional, must be a lover of fruit, for fruit's sake. He must take pleasure in growing fruit. If he does not he will fail as the grower of fruit, be there one or a hundred trees in his orchard.

On the other side of the question, there is undoubtedly great pleasure in producing one's own fruit, be it ever so costly. There is great pleasure and happiness in having fruit, freshly plucked from the tree or vine, throughout the season. A pleasure and satisfaction that cannot be purchased by dollars and cents at the corner fruit stand. There is insured to the owner of the home orchard a variety of diet that he would not have if he had to purchase it. His family lives better, is happier and the world is brighter if he has a good home orchard that can be drawn upon for the best that nature can produce.

Viewed from the commercial standpoint there is no place in farm economy for the home orchard. Viewed from the standpoint of happiness, satisfaction, cheerfulness, better digestion, better health and better living, the home orchard deserves a place on every farm, and fresh fruit in season ought to be found upon every farmer's table. May the home orchard never become a menace, and long may it thrive! All honor to the home orchard; it has a place in our farm life that can never be taken by any other agency.

A New Horticultural Society

A special meeting of the American Pomological Society was held in Washington Nov. 17th and 18th. The object of the meeting was to determine a future line of policy for the society.

The American Pomological Society was formed nearly three-quarters of a century ago by a group of pioneer fruit growers. Most of them were amateurs, and for years the society was conducted along amateur lines. Also for years it was the only national agency working for the fruit growing interests. In time the problems of the fruit industry were taken up by the U. S. Department of Agriculture, the various state experiment stations and agricultural colleges. Fruit growing was rapidly commercialized and numerous state horticultural societies and growers' organizations sprang up all over the entire country. In time these various agencies had taken over all the work that the American Pomological Society was trying to do. The society degenerated into an organization without a definite object in view. Attendance at its biennial meetings began to fall off. It had nothing to offer to the new regime of commercial fruit growers. It no longer attracted the experimental horticulturists or horticultural teachers, and became a mere aggregation of men, mostly past the meridian of life, who were bound together by ties of friendship and the glorious traditions of past accomplishments of the society.

Some of the younger men interested in the society saw that it was doomed to oblivion if it kept on with its past policies, and believing that it could be still made an agency for good, suggested that a definite policy of procedure ought

to be developed, and its field of work be clearly outlined.

At a meeting of the society held in California in 1915 the suggestion was made that there be formed under the leadership of the American Pomological Society a federation of all the horticultural and pomological societies in the country. The Washington meeting was called to consider the advisability of such a move. About two dozen men from various parts of the Union met in the Ebbitt House parlors and discussed the question for nearly two days. As a result of these deliberations it was decided to launch a new organization to be known tentatively as the American Horticultural Congress. It was proposed that the voting membership of the Congress should be comprised of representatives chosen by the various horticultural agencies throughout the nation, such as the state horticultural societies, the Apple Growers' Union, the Vegetable Growers' Association, the American Florists, the Rose Growers' Society, etc. Individuals might also become members, but without voting powers as individuals. Prof. W. N. Hutt, of North Carolina, was elected president, and E. R. Lake, of Washington, D. C., secretary.

The object of the new society is to band together all the horticultural interests of the country for the promoting and backing of legislation concerning the horticultural interests of the nation or the various states, and to discuss and suggest lines of action upon all horticultural problems of nation-wide bearing.

In the formation of the new society the original purpose of the meeting seemed to have been lost sight of. That is, the future of the American Pomological Society, will it go on existing. If so, what will it do? What will its policy be? Has it any work to do? If so, what is it? Doubtless these pertinent questions will be threshed out and answered at the meeting to be held in Boston next year.

One thing is sure, the American Pomological Society must outline a definite policy and a constructive program of work or it will soon cease to exist as a potent factor in American horticultural affairs.

Scheduled Farmers' Meetings

Farmers' Week, State College, Pa., Dec. 27, to Jan. 3.
Farmers' Week, W. Va. Experiment Station, Morgantown, W. Va., Jan. 1-3.
Winter Short Courses, Maryland State College, College Park, Md., Jan. 2 to March 9.
Annual meeting of West Virginia State Horticultural Society, Morgantown, W. Va., Jan. 3.

Winter Short Courses Ohio College of Agriculture, Columbus, O., Jan. 2 to Feb. 23.
New York State Fruit Growers' Association, Rochester, N. Y., Jan. 3-5.
Pennsylvania Horticultural Society, Dover, Del., Jan. 8-10.
New York State Association of County Agricultural Societies, Albany, N. Y., Jan. 18.
Pennsylvania State Board of Agriculture, State Horticultural Society, State Breeders' Association, State Vegetable Growers' Association, Harrisburg, Pa., Jan. 23-25.
New Jersey State Board of Agriculture, Trenton, N. J., Jan. 24-26.
Farmers' Week, Ohio State University, Columbus, O., Jan. 29 to Feb. 2.
Ohio State Dairymen's Association, Columbus, O., Jan. 30 to Feb. 2.
Ohio Vegetable Growers' Association, Columbus, O., Feb. 1-2.
Ohio State Corn Show, Ohio State University, Columbus, O., Jan. 29 to Feb. 2.
Entries close Wednesday, Jan. 23.
Ohio State Horticultural Society, Columbus, O., Jan. 30-31.

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Soils and Field Crops

Conducted by A. E. GRANTHAM

In this department will be answered questions relating to soils and their improvement, field crops and the use of lime. Questions should be addressed to the "Soils and Field Crops" department, care of The Practical Farmer, Philadelphia, Pa.

The Labor Income of the Farm

During the past few years considerable attention has been paid to the farm as a business enterprise. Investigators have made a study of farms in many sections of the country from the standpoint of the size, capitalization, equipment and how these are related to the farm income. The principal object has been to determine the profits in the business of farming. It was necessary in the first place to establish a method of measuring the profits. It is clear that if all the running expenses of the farm, including labor, are subtracted from the farm sales the remainder is the income produced by the farmer and his money. The money invested in the farm and equipment represents the capital stock. This, if loaned out at ordinary rates of interest, would produce a definite income whether the owner worked or not. Hence if we subtract the sum which the capital invested in land and equipment would earn at ordinary rates of interest from the yearly receipts of the farm, the difference would express the pay that the farmer received for his year's work. This is known as the labor income. To make this clear, let us take a concrete example: A farm, including live stock and equipment, is worth \$15,000. The farmer's net receipts after all expenses are paid, per year, are \$1,950. The interest on \$15,000 at 5 per cent. is \$750. The difference between \$1,950 and \$750 is \$1,200, or the labor income. This means that his farm has paid interest on the investment at the prevailing rate, has paid all the operating expenses and has left \$1,200 to pay for his management and labor. This method of measuring the profits of the farm seems perfectly fair and indicates what returns the farmer receives for his labor and managing ability. The farmer's ability to manage becomes more important as the size of the farm increases. When all of the work is done by one man the directive capacity of the owner is perhaps less important, since the output of the farm is small. However, when a number of men are employed, managing ability of a high order is demanded if the business is to succeed. The size of the labor income may be affected in a thousand ways. It is no longer sufficient to know how to produce large crops, but it must be known how to produce them profitably. The agricultural experiment stations of the country are doing a splendid work in bringing to the attention of the farmer the better methods of soil management and the principles of plant and animal improvement. Yet with all this the profits of the farm will be determined ultimately by the management of the owner. In no field of human endeavor is there a greater opportunity for the application of the principles of efficiency. The very nature of farming makes it difficult to apply hard and fast rules of management. For this reason a high grade of intelligence and business sagacity is needed in operating a farm profitably. Labor and equipment are two large factors in determining the net profits.

How many acres should a man and team plow in a day? How large a farm must a man operate in order to afford to own a wheat binder or corn harvester? Does the hired man drive two horses to the plow instead of three or four? Are the horses of the size for maximum effi-

ciency? Is enough live stock kept to use up the roughage produced on the farm? Is the labor of the farm distributed in such a manner as to enable the owner to keep one or two good men the year around? Have the unprofitable cows of the herd and the non-producing hens of the flock been weeded out? These simply illustrate a few of the many phases of the problems which have a direct bearing on the size of the labor income. It is the writer's plan, in a later article, to take up some of these points for discussion.

The Shrinkage of Corn

It is a well recognized fact that corn loses considerable weight from the time it is husked until late in the spring. Not all growers, however, are aware of the rate or the exact extent of this loss. The moisture content of ear corn when husked varies from 15 to 35 per cent. or more. Thoroughly air-dried corn carries from 10 to 14 per cent. of moisture. The difference between this and the moisture content at the time of husking represents the loss upon drying. Corn that is well matured usually carries from 16 to 20 per cent. of moisture at the time of harvest, while immature or soft corn may have as much as 35 per cent. The loss of weight due to the evaporation of the water may easily amount to 20 per cent. in the case of immature corn. In the case of well matured grain this loss may not exceed 8 or 10 per cent. the first year. Several experiments have been conducted with the object of determining the loss due to shrinkage when the corn was stored under ordinary conditions. The Illinois Station found that the greatest shrinkage takes place during the months of April and May. After the latter month corn in the crib loses very little in weight. In the humid climate of the Eastern States the distribution of loss is probably not the same as in Illinois. It is doubtful whether corn will dry out as completely under these conditions. The moisture content of corn in the spring as compared to that in the fall determines to a large extent the advisability of marketing at the respective periods. One can afford to take a lower price per bushel in the fall, since the grain contains more moisture and therefore weighs more. If grain shrinks 12 per cent. in storage due to loss of moisture alone, the grower can afford to take 12 per cent. less per bushel for it in the fall. Other advantages in selling at harvest time are the lessened risk and expense in buildings and insurance. There are also other losses due to mice and rats which are very likely to infest the cribs unless especially constructed. Newly harvested corn can not be safely housed in tight bins and a well ventilated compartment is difficult to construct so as to prevent the entrance of mice.

These facts must be considered in storing and holding corn through the winter. The business of the farmer will be profitable to the extent that he recognizes the marketing, as well as the producing, end of his enterprise.

Storing Seed Corn

It is well at this season to make sure that the seed corn is well dried and in a safe, dry place before cold weather sets in. Cold will not injure seed corn if it is well dried or cured. It should

not contain more than 10 or 15 per cent. moisture when it is stored permanently for the winter. If it is not this dry it should be placed where the excess moisture may be driven off. After that the seed may be placed wherever the temperature is uniform, preferably in the ventilated loft of a building where rain does not drive in. Another important feature in storing seed is to see that it is protected from mice and rats. There are many methods of doing this, but avoid placing the ears in tight receptacles where the ventilation is poor. There are many seed corn racks on the market that are made in such a fashion as to prevent the mice from getting to the corn. Home-made devices are equally effective if the grain is suspended above the floor or away from objects that will enable the mice to climb or jump on the grain. It is a good plan to inspect the seed every two or three weeks during the winter in order to forestall attacks by rodents.

Care of the seed corn is a very important part of the work for a successful crop next year.

The Winter Pasturing of Small Grain

Where winter grain, such as wheat or rye, makes a good growth in the fall it may be advantageous to turn on the stock early in the spring. In fact, rye is often pastured in the fall and during

the periods of open weather in the winter. A moderate amount of pasturing is of benefit to wheat if it has made a very heavy growth. There will be less of a tendency to lodge and the grain seems to fill better. The reason seems to be that the more vegetative portions of the plant being cut back in this manner, reduce the excessive proportion of straw to grain. It is well known that a very heavy growth of straw is not accompanied by a proportionate yield of grain. Such practice will not necessarily increase the yield, but it will lessen the chances of lodging. Considerable judgment must be exercised in turning stock on to wheat, as the grain will be damaged by tramping if the ground is too wet. When the soil is soft the hoofs of the animals will also cut and damage the plants. Rye, on the other hand, may be pastured more freely, as it recuperates more rapidly than wheat. Grain sown on rich land, as, for example, after early potatoes, is one of those cases where pasturing will be of value to the crop. Where the pasturing is continued in the spring it will be necessary to turn off the stock before there is any beginning of "boating" or "shooting" of the grain.

From 1910 to 1914 Maine averaged 216 bushels of potatoes to the acre. While New York's average annual production was larger than Maine's for the years given, the New York farmer raised only 88 bushels an acre.

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POULTRY

Edited by F. V. L. TURNER

All letters, inquiries and requests in reference to poultry, should be addressed to the Poultry Editor of The Practical Farmer, Philadelphia, Pa.

Practical Poultry Talks

This Winter's Hen Feed

Barley seems to be the logical substitute for a portion of the wheat ration that goes to make eggs. In chemical forces as adapted to the needs of egg layers barley is, by comparison of elements, very little different from wheat. Barley meal and wheat middlings do not differ so widely that an easy adjustment of the two in combination cannot be profitably made. Buckwheat groats, hulled buckwheat, are nearly of the same potential energy as wheat or barley.

Whole wheat is made up as follows: Water, 10.5%; dry matter, 89.5%, this dry matter consisting of fibre, 1.8%; ash, 1.8%; protein, 11.9%; carbohydrates, 71.9%; fat, 2.1%, making a nutritive ratio 1:6.3, and having a potential energy 102 in one ounce.

Whole barley contains water, 10.9%; dry matter, 89.1%, the dry matter being subdivided as follows: Fibre, 2.7%; ash, 2.4%; protein, 12.4%; carbohydrates, 69.8%; fat, 1.8%, making a nutritive ratio 1:6, and having a potential energy 100 in one ounce.

Barley meal contains 11.9% water and 88.1% dry matter, consisting of fibre, 6.5%; ash, 2.6%; protein, 10.5%; carbohydrates, 66.3%; and fat, 2.2%, making a ratio 1:6.8, and having a potential energy 93 in one ounce.

Wheat middlings is credited with 22.1% water and 77.9% dry matter, subdivided into fibre, 4.6%; ash, 3.3%; protein, 15.6%; carbohydrates, 60.4%; and fat, 4.0%, making a ratio 1:4.7 and having a potential energy 98 in one ounce.

Forty pounds of wheat, 30 pounds of barley and 30 pounds of buckwheat groats would give approximately the same potential energy as wheat alone and would furnish a variety much more pleasing to the egg maker, and conducive to better digestion, and good digestion means more eggs.

Buckwheat middlings give a greater potential energy than wheat middlings, and with a small quantity of wheat bran a combination can be made to bring the potential energy around 98, that required from wheat middlings.

The seeming technical nature of these figures and designations disappears quickly in the statements that protein is the matter making bone, blood, eggs, feathers and muscle; carbohydrates supply bodily heat and energy; fats contribute heat and energy, help supply the growing material which the protein develops and enters into nearly 50 per cent. of the solid portion of the egg.

Ash is the lime-giving material and fibre is the shell or husk part of the several articles entering into the hen's diet, and is almost wholly indigestible.

Potential energy is nothing more than heat giving power or value of the digestible portion of the whole mass of the ration, while nutritive ratio is the actual intrinsic quality or worth of a ration. It is generally accepted that a nutritive ratio of 1:6 and a potential energy of 100 will produce eggs up to the limit of the hen's capacity, if housing conditions are such that no excess drain is made upon the potential energy of the ration beyond that required for eggs.

Probably more eggs could be obtained if the digestive organs could stand more

animal protein without serious (and frequently fatal) injury.

In this connection it can be safely stated that animal proteins, specifically those obtained from beef scrap, can be materially increased in quantity fed when sifted and mixed (the small portion) in a dry mash fed all day, the larger portion going into the grain mixture, which should be fed for a few hours in the afternoon, usually from 4 to 4.30 P. M. until roosting time in summer and from 3 P. M. in winter.

There is much to be said in favor of balanced rations; some years ago a rather prolific writer of poultry cultural notes suggested that the novice in poultry rearing would soon go broke on scientific feeding. Whether the statement came from a lack of knowledge of the science of feeding or because of contentment with his lot, his income from his flock, is not known, but today this same writer is more given to the conscientious study of scientific feeding than the average poultry man, and this change from the "good old way, a little corn in winter and the plow furrow in summer," has been due, apparently, to the success attending the application of science to the hen's needs—science is nothing if it is not truth, and science has brought up to the present high standard, milk getting, egg laying and improvement in all agricultural pursuits. Take out of farming soil analysis and special fertilizers designed upon this analysis and away goes the farm crop.

Heredity in Egg Production

"Like father like son" does not hold anywhere near good in creating egg layers; rather, like mother the son is the father of like daughters.

The power of transmission in egg laying is from the mother through the father to his daughters, each generation of granddaughters possessing the egg laying capacity of its granddam to the extent that nature says shall be, usually 60 to 75 per cent., provided the mate of the granddam inherited from his mother her capacity for productivity, for in the same proportion the males from any mating can only be prepotent (possessed of the double dose of productivity coming from the sire and dam) to the same extent that the females are productive (possessing the laying capacity of their dam and granddam, hereditarily carried down by their sire from his dam).

With these facts, proven beyond question, in mind, the next nearest approach to proven determinations in producing layers is anatomical counterpart of the female which should be apparent in the male, that he in turn may transmit to his female offspring, a natural proportion of his male progeny.

A simple study of the hen's anatomy, that is, the anatomy of a known layer, as against a similar study of the anatomy of a non-layer (a poor producer as proven in the pullet year by the trap nest) teaches us (and this is immediately science of the highest order, truth in the concrete) that the pelvic bones of the layer are thin and straight, the distance between them varying with ability to lay, the distance between the end of the pelvic bones and the rear end of the breast bone likewise is evidence, in conjunction with the thinness and distance apart of the pelvic bones, of capacity to lay.

We are told by the Scotchman and the Englishman that a large comb, prominent eye and large wattles, straight back, legs set well apart, fluff large and rounded, tall wide spread, carried high, are all anatomical indications of laying capacity, the male prominent in these characteristics possessing the power to pass on these characteristics (to his female young at least) to about 60 to 75 per cent. and probably to an equal percentage of his male get.

Simply mating the heavy laying hen to any male without regard to his ancestry, particularly the female side of it, will not produce heavy layers in the resultant progeny except to a small degree or in inverse proportion, as demanded and insisted by the laws of heredity.

In the examination of 3000 birds entered in an American egg laying competition the proportions of layers and non-layers have been proven beyond dispute; also, the anatomical studies in connection with these same 3000 birds have proven beyond question that the heavy layers are as easily picked out at the beginning of the competition year as their records prove them later on.

What little time is devoted to this study is well worth while; to pick the layers from a flock of any proportions is a simple matter and the consequent reduction in feeding expense will amount to more money in a year than the cost of the few hours of study necessary to its accomplishment.

Home Turkey Rearing

Any successful turkey raiser will tell you that turkey rearing is simple; every unsuccessful turkey raiser will tell you that the turkey is the most difficult of any fowl to rear.

As a matter of fact, the turkey is easy to rear as well as easy to keep going, and they are so tame, so gentle, and easily controlled. As a matter of pleasure they are more satisfactory than other fowl for many reasons; for food they cannot be excelled by other domesticated birds. Almost any kind will do for home use, and really there is only one preference for small areas, the Black turkey (not to be confounded with the Bronze).

An old hen will hatch out turkey eggs; about eight is the number that can be comfortably covered. The hen mother will take a little more care of the young poults than the turkey mother in bad weather. Young turkeys are no more tender or delicate than young chicks, ducks, geese or guineas, but the turkey mother

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will not, or can not, bring under her protecting wing the poults as can the hen mother, and for that reason the hen mother is better.

The Bourbon Red, White Holland and Bronze have been easily raised by the writer on small areas; the latter part of May has usually been selected for hatching, and June will give just as good results.

Probably the easiest way to tame turkeys is to cut one wing as soon as they show a desire to hike over the fence into the neighbor's yard. The wing will not grow out again until a molt takes place, by which time they will have ceased all efforts to stray or wander, in the meantime becoming quite docile.

Ordinarily the turkey is a high roosting individual, preferring a tree limb to a sheltered home, unless early confined to the chicken yard and hen house. A turkey loves company, usually a flock of chickens wherein the males are not pugnacious. When early taught to eat mash identically the same rations fed the hens will keep them satisfied. Some green food will help keep them in shape, and onion is relished greatly; in fact, a handful of chopped onion, each piece about the size of a peanut kernel, will lead a half dozen all over the place. Feeding from the hand is quickly acquired by most turkeys reared by hen mothers.

The turkey has few diseases, is exceedingly bilious by nature and indicates its state of health by roughness or smoothness of plumage. Olive oil (not ordinary drug store sweet oil) is the one safe remedy for turkey troubles; a dose of from 20 drops to a tablespoonful, according to age, from six weeks to six months, will usually remedy most of the turkey ailments. The dose should be every other day until improvement is noticed, usually indicated by activity and appetite. Stale bread broken into small particles, is the sick turkey's diet.

Black turkeys are rare, so the choice very likely resolves itself to any of the varieties mentioned.

Worth While Suggestions

Thanksgiving has passed and with it thousands of turkeys—and those who danced have paid. Why not raise a few and choke the hard-earned dollars the middlemen got back into your pocket-books next Thanksgiving?

And eggs are still going up in price. It is now the hen that lays the gilded egg.

Chicago's health authorities are making war on the storage egg, not the well stored good egg, but the well stored bad egg. A corner in eggs is the stake and it looks as if the corner was about to break from its shell through sheer force of good egg manners.

When one man holds 72,000,000 eggs in one market (Chicago) the rest of the egg eating centers (and they exist on every square foot of occupied territory in these United States) will not have much of a show at cheap eggs. Chicago's eggman is not the only one in this country.

Water-glass is just as good an egg preserver as cold storage, and very much the cheaper for the producer.

Speed up the feather growth on those slow molters—their eggs are worth many times the little flimsy meal they will need for a new coat.

Time to start the business of getting next spring's machinery in order for hatching and rearing your pullet flock, and if you are not hatching out a few broilers for January, February and March profits you are losing money.

Fine time, just now, to turn over the chicken yard and then give it a good coat of lime—what a difference in health

of the flock would be made by next fall. Old man Roup and all of his relatives are busy just now looking up cracks in hen houses; they are going to be mighty busy until spring, so look out for them.

Young Catarrh, a frequent visitor to hennom, is again in our midst and will accept several invitations from social celebrities keeping open house.

Bronchitis & Co. are still manufacturing "honks" for those who wish to be heard—they are rapidly placing their goods this fall.

It's the pullets that lay in the fall and winter—not the hens. Raising pullets to produce high priced eggs is the modern way.

It may not be safe to put all of your eggs in one basket—but an incubator is not a basket.

Preparedness in the hen game means to be armed with an incubator when the hens refuse to sit.

What We Are Asked

240-Egg Layer.—L. M. C., New York, writes: "If I buy nothing but trapezoid birds with records of 240 eggs I know that all of the offspring will lay 240 eggs, or more; what troubles me most is this, how am I to know that the records are correct?"

If seems to be in order—if you know that the progeny will all lay 240 eggs you have certainly some knowledge not given to any other human being. Suppose you mate a cockerel to these 240 egg layers, this cockerel inheriting his mother's capacity, she having only been able to lay 30 eggs in one year—by the same law that will make the progeny of these 240 egg layers lay 240 eggs, the offspring of that cockerel will lay, the female side of it, 30 eggs each. How do you propose to know whether the male has any worth-while ancestry? Is not his ancestral trail valuable or valueless as his ancestor's record is good or bad? We know by the laws of heredity in fowls that the mother's character and capacity is transmitted through her son to his daughters. The records of the birds should be certified in some laying competition to put them beyond dispute.

Demand for Hatching Eggs.—A. M. D., Pennsylvania, writes: "Have you found in your contact with conditions that there is going to be a dearth of chicks and hatching eggs next spring? My reason for asking is this: My section has produced each year a large number of eggs for the large incubator people, and if there is going to be a scarcity I want to buy an incubator and get some of the profit supplying my neighborhood with chicks."

There is every indication that next spring will witness the greatest demand ever experienced for hatching eggs and day-old chicks; in fact, the demand is already apparent, some of the large dealers reporting orders from former customers and quite a few orders from entirely new people. With this information in hand it is safe to conclude that next spring will tax every incubator, large and small, to its full capacity over a long season. There is another condition that makes for a big business in chicks and eggs next spring; the co. of poultry feeds caused a reduction of stock, breeders selling off every fowl that could be spared. Naturally there will be a shortage of eggs for hatching into day-old chicks and for storage in March and April; because of this reduction in stock, eggs are going to be so profitable to producers that the incubator and brooder will both be in great demand. To avoid disappointment in delivery of incubators and brooders purchasers should at once place their orders.

Suitable Males.—S. B. O., New Jersey, writes: "I have followed closely your suggestions about mating to produce layers. I have females that have been trapped as pullets. What I want to know is, how can I get males that are suitable to mate with them so that they will again give me layers in the succeeding generation? Some of the pullets laid over 240 eggs, one laying 249 and all laid more than 200 eggs each."

Your question should be asked by every poultry raiser in the world, provided, of course, they have given the same care to their business that you evidently have. You can buy males that are sons of heavy layers, but you can not always be sure, and neither can the producer of such males, that you are getting a dominant or recessive, one prepotent to heavy laying or prepotent to poor laying. In one of the articles in this issue special reference is made to this case. The male bird should possess

the same conformation as the hen that lays the greatest number of eggs, and if he possesses them to a greater degree his female progeny will be a majority of them, lay more eggs than their mothers.

The pelvic bones at full maturity of the male, about April 1st (if he has not been maintained in celibacy) or within 21 days after mating if he has, have pelvic bones thin, and when held between two fingers not over one-eighth of an inch thick, flesh and bone combined, setting at least enough apart to admit three fingers laid flat against the fluff. There should be between the extreme ends of the pelvic bones and rear of the keel or breast bone, an abdominal region large enough to permit the whole hand to be laid flat, thumb and four fingers, at right angles to the length of the body across the fluff.

A well developed comb, good supply of wattles, legs wide apart and a prominent (not sunken) eye will give you a prepotent son of a heavy laying dam. The resultant female young from such a sire and your trapezoid pullets should lay, a certain percentage of them, over 250 eggs each in their pullet year, if properly reared.

Frosted Combs.—Mrs. P. L. F., New York, writes: "How can I best prevent frosted combs on my Minorcas?"

Frost-proof houses are hard to build, especially in a section of the country where moisture is more or less prevalent. If your house is of the "A" roof type, fill in the space between peak and plates with lathing strips 4 inches apart, and fill the space from strips to peak with straw, hay, etc. If the house is shed-roof make it warmer at night; that is, see that slower ventilation occurs to overcome the freezing of the moisture-laden air. Should combs become badly frosted, have handy a tight barrel, the bottom covered with 12 inches of clean straw and a cover made of burlap bags. Upon discovering a frosted comb, place the affected bird in the barrel and cover with the burlap bag. As a partial preventive against frosting, grease liberally the combs and wattles with vaseline oil or lard.

Wonderful Egg Producer

Any poultry raiser can easily double his profits by doubling the egg production of his hens. A scientific tonic has been discovered that revitalizes the flock and makes hens work all the time. The tonic is called "More Eggs." Give your hens a few cents' worth of "More Eggs" and you will be amazed and delighted with results. A dollar's worth of "More Eggs" will double this year's production of eggs, so if you wish to try this great profit maker, write E. J. Reefer, poultry expert, 609 Chestnut St., Philadelphia, Pa., who will send you a season's supply of "More Eggs" Tonic for \$1.00 (prepaid). So confident is Mr. Reefer of the results that a million dollar bank guarantee if you are not absolutely satisfied your dollar will be returned on return. Send a dollar today and ask Mr. Reefer for his Free poultry book that tells the experience of a man who has made a fortune out of poultry.—Adv.

Poultry Show Dates

Boyetown, Pa., Dec. 26-30; H. R. Vander-slice, secretary, Boyetown.
New York, Madison Square Garden, Dec. 20 to Jan. 3; Charles D. Cleveland, secretary, Eatonville, N. Y.
Johnstown, Pa., Jan. 8-13; Earl Penrod, secretary, 104 Union St.
Philadelphia, Jan. 14-15; R. F. Poling, secretary, 1518 Market St.
Medford, N. J., Jan. 17-20; P. S. Platt, secretary, Wallingford, Pa.
Buckhannon, W. Va., Jan. 1-5, R. F. Poling, secretary, 1518 Market St.
Union City, Pa., Jan. 2-5, E. C. Mosher, secretary, 1518 Market St.
Michigan City, Ind., Jan. 4-9, A. L. Peterson.
LaFayette, Ind., Jan. 8-13, C. J. Munger, secretary, 1518 Market St.
Jefferson, Ky., Jan. 8-13, Ohio Falls Poultry Association.
Evansville, Ind., Jan. 8-14, W. S. Kirves, secretary, 1518 Market St.
Warwick, N. Y., Jan. 9-11, G. A. Williams, secretary, 1518 Market St.
Norfolk, Mass., Jan. 9-13, W. B. Atherton, secretary, 1518 Market St.
Bank Street, Va., Jan. 9-13, C. D. Page, 123 Elmira Heights, N. Y., Jan. 10-13, H. B. Peckham.
Charleston, W. Va., Jan. 15-20, Julian C. Byrd.
Corry, Pa., Jan. 15-20, L. M. Durham.
N. Y., Jan. 15-21, L. J. Bushnell, secretary, 1518 Market St.
Oriskany, N. Y., Jan. 22-27, Geo. Patton.
Huntington, W. Va., Jan. 22-26, Geo. Marietta, O. Jan. 22-27, T. N. Fenn.
Middleton, Conn., Jan. 23-26, Charles L. Bliss.
Name following date is secretary of the show, whose address is place stated, unless otherwise specified.

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Our Barter Column

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OUR EXPERIENCE POOL

All our readers are invited to contribute their experiences on the topics under discussion. \$2.00 will be paid for the best, and \$1.00 for the next best contribution, and 50c for each other article published. Contributions must be in our hands 15 days before date of issue.

Topic No. 1210, JAN. 1.—What are you doing with the farm wood lot to conserve or improve it? If you are setting out new trees what varieties are they? Have you provided any fire protection for it? What products do you receive from it except fuel and fence posts for home consumption? How large is your wood lot and what do you consider it worth to you each year? Limit, 250 words.

Topic No. 1211, JAN. 15.—How do you handle the manure from your stock? Do you have a track carrier in the stable? Do you pile the manure in the barnyard, in a shed or haul it direct to the field? Do you use a spreader? Can you tell us how much it costs to apply a ton of manure to your fields? Limit, 250 words.

Topic No. 1212, FEB. 1.—What has been your experience feeding corn silage or mixtures of it, to horses, mules, sheep, swine or poultry? Tell how much was given at each feed and what was used with it to complete the ration. What effect has it appeared to have on the general health of the animals? Do you save any money by feeding it and selling your farm crops? Do not write about your experience feeding it to dairy and beef cattle; we have had experience Pools on that subject, confine yourselves to your experience with silage as a feed to stock mentioned in the question.

Topic No. 1209.—We notice that a great many farmers in the East still shock and husk their corn in the field. If you are one of them, what care do you take of the fodder? Do you cut or shred it for feeding? If you feed it outside, what do you do with the stalks? Why don't you get a silo?

R. B. R., Ozark, Ill.—Yes, I cut and chafe quite a bit of corn fodder every year to feed in connection with silage and hay. But my way of doing it has proved to get the food value about all out of the feed, and I have found it to be an excellent cheap roughage.

I cut and shock every one does, and just as soon as it is thoroughly cured so it will keep, it is hauled and stacked in a large mow built for the purpose. I always try to plant late corn to cut, and cut at full green. Now comes the way of making all kinds of stock eat it. I stay in the barn myself and as fast as the loads are brought in and spread out, I give a good covering with salt and sugar mixed. Does not take much sugar to give an excellent flavor with the salt. This salt and sugar all dissolves and adheres to the stalks and fodder. You can see the horses and cows standing and chewing large stalks, eating the entire stalk much of the time. After they have eaten their fill of silage they stand and eat this fodder thus put up and then they take a good fill with water, and they ought to see how they grow fat and sleek and come out in fine shape in the winter. Even with the silo I should not think of doing without corn fodder every year. A little grain concentrates, silage and this fodder are the three things we can produce cattle and horses cheaper than with so much grain. Just try the trick if you have any doubt. Twenty-five pounds of salt and 5 pounds of sugar will put away four or five good loads in shape to be eaten nicely.

L. C. B., Newtown Square, Pa.—We never forget that from one-fifth to one-third of the value of the mature corn plant is in the leaves and stalk. We do not have a silo, but hope to have one next year, so try to take as good care of the fodder as we can. Thirty-six hills, containing two or three stalks each are cut and made into a shock. This stands for two or three weeks until the corn is ready to be husked in the field. The fodder from 16 of these shocks, is tied into bundles about one foot in diameter and reared up into a fodder shock. A piece of binder twine is run around the fodder shock to keep the bundles from being blown down, and as soon as it is dry enough we haul it into the barn. We have placed the fodder cutter on the barn floor and run a belt to our 4 H. P. gasoline engine. We cut a trap-door in the barn floor just at the mouth of the cutter, so that when we cut the fodder into 1-inch lengths we open the door and it goes into a pile in the feeding alley in front of the cows. We use a bushel basket to feed it with, and what the cows leave helps out with the bedding. As we have a concrete gutter behind them the refuse fodder makes an

excellent absorbent, taking up all the liquids and making the manure in the shape for spreading. We sprinkle acid phosphate in the gutter each day, so do not feel that we are losing much fertility.

E. A. W., Street, Md.—Only recently have silos become common here and immediately around us; a small and steadily decreasing minority still believe they do not pay. Still all farmers of this section shock and husk the greater portion of their corn because, at present prices, it pays well to sell ear corn, and because as yet very few have silage mow, but much and beef animals, and often not enough for those.

Formerly, fodder was shredded or cut into 1 to 2-inch lengths; now it is usually cut into 4 to 5-inch lengths to prevent the sore mouths caused by animals biting down on sharp ends of stalks, as when cut short. This cut fodder is loosely packed, by blowers, in great bulk, in closed sheds or mows, and kept well. Shredded fodder, in bulk, frequently ferments and becomes not only useless but dangerous, as men may feed quantities of it before noticing its condition. For safety it needs to be stored as silage.

The small quantities still fed outside, uncut, are either spread about barnyards or over convenient fields where the animals may pick at it while the fields gradually become covered with stalks. This last method is preferable—if you must feed whole stalks—as, while stalks absorb some liquid in barnyards, the expense of handling such manure more than offsets this gain over the field method.

R. S. G., Peach Bottom, Pa.—No crop grown in the East approaches in value that of the corn crop, and although the grain is the most valuable part of it, the fodder is well worth careful handling. Our usual practice is to haul and stack the fodder as soon as husking is cut as needed. Shredding is preferable to cutting, because the shredded fodder is much easier to handle, it is a better absorbent when the discard is used for bedding, and the manure is easier to handle and spreads more evenly when applied to the land. As a means of storing part of the corn crop, we find a good silo to be without a fault, but it is not practical to handle the entire crop in this manner, for although a small amount of good silage may be fed to horses, hogs and hens, yet the larger part of the ration should be in the form of the dry grain. Our daily ration for milking cows is 40 lbs. silage with 2½ lbs. of cotton seed meal, and shredded fodder for roughage. Our small silo 7x20, feeds three cows 200 days, and does it cheaper and gives better results than could be secured by any other method. Results are what we are all after. Build a silo.

E. M., Akron, O.—This question of fodder is a very serious one, but is not looked at in that light by many people. We cut our corn as soon as the corn is hard enough to be put into the crib. We used to make a practice of husking in the field, but of late years we could see where there was much loss, so after getting together a company of ten farmers we decided to buy a corn husker. Now we save all those valuable leaves and small stalks which were broken up in the field; and besides, we have a very palatable feed, also the rough, coarse fodder as before. This finely shredded fodder is eaten up clean during the winter, but we always feed more than the stock eats, and twice a day we take the part not eaten and use it for bedding. Although this is not as satisfactory as straw it is at the same time very good, for it keeps the cows clean, on account of the great amount used, and soaks up all the manure juices and this makes the best bed for the cows. It can be spread on the young clover during the winter and spring and none will be raked up in the hay the coming summer. We are much in favor of a silo, as a good many other tenants are, but we could not put one on the farm at our own expense when the landlord would

not furnish the material, and besides this, the true value of the silo is not yet acknowledged in the East, but very rapid strides are being made.

W. H. R., Palm, Pa.—A large percentage of the farmers here have silos, but in most cases the corn acreage is large enough to leave a good deal to be husked. Corn fodder has about three-quarters the feeding value of timothy hay, so it is well worth taking care of. I have tried a number of ways to harvest the crop. I have husked it from the standing stalk and then cut the fodder with the corn harvester. This is a saving of time, but the tops and most of the leaves are broken off and blown into the fence corner before the husking is finished. If it is husked with a husker and the fodder shredded into a mow, the fodder will become moldy so it is unfit for feeding.

I have found it most economical to cut the corn on shocks and later husk it by hand. The fodder is then tied into bundles about 3 feet in circumference and about 24 stood in a large shock. It is then left in the field several weeks long, or when it is hauled to the barn and stood in the mows, from which the hay has been baled, and is shredded for feeding and bedding as needed. One can leave the fodder in the field until one wishes to shred, but during the winter the weather is often such that it is unpleasant to go out and get it.

stacked up, placing bundles in an upright position. Care must be taken not to put it too thick lest it spoils.

The corn is husked during the winter when work is slack and expense is low. We have used a husker which shreds the stalks, but were never pleased with results. The objectionable features being that the fodder is apt to spoil, and there is considerable more trouble in handling it when feeding. We have never found that the stock would eat shredded stalks any better than, if as good as, those not shredded. The stalks, after husking, are tied up in a bundle that handles well and are fed during the winter in the bunks used for feeding hay. When the snow is not too deep they are fed to the sheep out of doors, and the stubs that are left are carried to the yards where they work into the manure.

Our particular live stock is sheep, and we have yet to learn of many who have fed much silage to sheep with success. We need considerable corn for feeding, and sell some corn for seed. Because of these reasons we have never erected a silo and we are satisfied with our method of caring for the corn crop.

J. E. R., Gallion, O.—I appreciate fodder, not only as a winter feed, but also (when used up or fed in barnyard) as No. 1 manure. We always plant corn as early as possible, thus enabling us to cut before frost, thereby enhancing its feeding value over one-half. Later it is husked, each shock tied in four or five bundles and these are again placed in 20 to 24-bundle shocks. When through husking (in October or fore part of November) the fodder is hauled to the barn or stacked or mowed away in barn for feeding to horses, cattle or sheep through the winter, making well rotted manure by using time for wheat or meadow fields.

We seldom feed outside, and if so, always place stalks down, using jointer on plow.

About half of the farmers here have silos, holding one-third or one-half of their crop. Many husk some of their corn with husking machine, shredding fodder at same time. Care should be taken lest it be shredded when too damp. A very large bank barn was destroyed this way over a year ago. The owner had just been in (a custom before retiring for the night) and about ten minutes later the whole mow was aflame. Owing to frost many fields were husked on the stalks around here this fall. These will be washed or broken down some zero morning and plowed under in spring.

There is more dry matter per acre, and a larger percentage of digestible dry matter in corn than in any other crop. In digestible quantities timothy has 1,410 pounds of nutrients to the acre; clover has 2,240; corn, 2,722, and corn silage 4,080. It is a common thing to grow from 15 to 20 tons of ensilage corn to the acre. This gives the dairyman the equivalent of spring feed all the year round, and with the grain and milk situation as it is today few dairymen can get along without the silo.

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JANUARY 1.—Have you made or lost money by raising turkeys, ducks, geese or guinea fow? Give briefly your experience and the figures on the investment and its profit or loss for any or all of these lines. Limit your manuscript to 250 words.

JANUARY 15.—Do you utilize the culls from your orchard and vineyard—apples, peaches, pears, plums or grapes—and if so, how do you do it? Do you consume all these cull products at home or do you have some to sell, and if so what prices and profits do you get from them? Limit, 250 words.

FEBRUARY 1.—In what ways during the past year have you made extra spending money for yourself or for some special purpose? Describe fully any method which you have found particularly profitable, especially any new plan.

Get your contribution in early. If it does not reach us at least 10 days before the date of issue, it will be too late.

Christmas Trees, Decorations, Entertainments and Dinners

Miss C. G. W., West Chester, Pa.—A good way to brighten Christmas is to have a gift hunt. Hand each one a Christmas post card, or put it at their plate with their name on it, and these words:

"If it is my card you seek Search under the Christmas tree antique."

If no tree, you can make it sofa, or china closet antique. In that package have a little penny horn. That card will read:

"If you really want my card, Look in the woodshed—and look hard."

You can use carriage house or carriage on any place you wish to hide the gift. That card will read:

"Look for me In the west pine tree."

The next:

"You see I'm found in divers places; Why not look near the pillow cases?" You can use mother's, father's, sister's or brother's pillow cases. Then that card will read:

"Before you can rest Hunt in the old tool chest."

Next:

"Look near the door If you want something more."

You can use cellar door or bed room door. The next card:

"Old Mother Hubbard Looked in the cupboard."

Next:

"In the northwest corner of the hay There's fun for you for many a day."

A good place to hide a sled. Only one must know the secret, but each one can wrap up their gifts and put their cards on them. If you write the hiding place on each gift it will be easier for you when you hide them.

Mrs. J. H. R., Wirt, Ind.—Our children select and cut their own Christmas tree. This is a treat looked forward to from one Christmas until the next. We save bright paper and the children make it into chains by gluing strips together in rings one through another. This makes good rainy-day work. We pop corn and string it on threads and this used in festoons with the paper chains is very decorative and easily prepared. Then at Christmas we thread oranges on cords and hang on the tree, also apples and bananas. Bags made of bright netting are decorative and cheap, and these may hold candy and nuts. We do not use candles. They are dangerous and children not accustomed to them do not miss them. Children delight in helping to decorate the tree and home.

Evergreen boughs make Christmas-like decorations, combined with bitter-sweet or other bright berries. Ferns can sometimes be found in the woods, and these placed in dishes with the dirt that clings to their roots, and well watered, are lovely.

We think this helps to mold character, to keep Christmas simply and within our means, and let each child have a share in the happy preparations. We do not serve an elaborate Christmas dinner, as children generally eat more than is good

for them at this time anyway. The keeping of Christmas is more in ourselves than in the mere abundance of gifts and goodies.

Mrs. A. D. A., Trappe, Pa.—This is how we celebrated Christmas at our home last year. The idea was so well liked that it will be repeated this year. We had all grown somewhat tired of the regular Christmas tree and wanted something new. We had quite a large supply of tree trimmings on hand, so at the suggestion of a friend a large umbrella frame was taken and gilded. This was then firmly fastened to the ceiling above the center of the living room. The steels were wound with tinsel, from which were hung brightly colored balls and the numerous-pretty fancies usually found on a tree.

From the middle was hung, with red ribbons of different lengths, seven snowballs (cotton). To each of these was attached a card bearing the name of some member of the family. No gifts were in sight. Upon opening the balls a paper was found telling the reader to look at a certain place, as under a certain chair in another room. Then upon looking there he would find another paper telling him to look in his left-hand bureau drawer, and so on until he had been led a merry hunt over almost the entire house, only to find his gifts in some absurd place in the attic, or cellar, or perhaps right near the starting point. The search occasioned much merriment and occupied about an hour.

Christmas garlands and mottoes were hung about the rooms.

The table was unique. A mound of imitation snow was in the center and into this a cardboard chimney painted to represent brick, was inserted. A Santa Claus doll, with a small bag filled with Christmas gifts on his back, was placed on the chimney top in such a way that he seemed to be looking down as if about to descend with his gifts to the little ones below. The following dinner was served and all did ample justice to it: Clear soup, roast turkey, rice, potatoes, creamed onions, scalloped squash, olives, celery, plum pudding, pumpkin pie, mince pie, apple pie, coffee and crackers.

Mrs. K. T. W., Tuscarora, N. Y.—The happiest idea in Christmas decoration that has come to me recently is the hanging of garlands on the outside of the house. Ropes of evergreen festooning doors and windows, twining porch rail and pillars, and gateways. The possibilities are almost limitless, and we may leave them up as long as we like, without annoyance from the litter, as is the case with interior decorations.

If a tree is not accessible, an old umbrella frame, trimmed with red and green paper festoons, and suspended from the ceiling, makes a good substitute. Wrap pop corn balls in waxed paper, tie with bright cord or holly ribbon, leaving ends to attach to branches. Cut strips of red and green paper 5 inches long by 1 inch wide, and let the children make paper chain festoons by looping together and pasting. Let old and young have their rightful share of joyous preparations. Hang suet from the branches of the trees on the lawn for the birds at yuletide. Make at least one gift to some one who would otherwise be forgotten.

Mrs. S. M. J., Kentwood, La.—The climate in our Gulf coast section is so mild that we generally have our Christmas festivities out of doors. In the center of our woods lot is an open space; in the middle of this space stands a lovely holly which is loaded with its scarlet berries every season. This has been our Christmas tree for several years. The day before the family—sometimes two or three families—decorate the tree with strings of pop corn, bayberries, magnolia seed, paper chains, stars cut from tinfoil, and candles. We dip cotton wadding in strong alum or salt water, dry quickly before the fire, pick to pieces and scatter over the tree; this sparkles like frost after night. Each person hangs on

his or her gifts. The boys bring a few loads of wood and pile for a fire at a safe distance from the tree. After supper the fires are kindled, candles lighted and we sent ourselves about the tree on chairs and stools to wait for Santa, who soon comes with his cap and shoulders white and sparkling with cotton and mica powder. He always brings each child a "snowball from the North Pole" (ice cream, not too rich, wrapped in waxed paper). He takes time to sip a cup of coffee and eat a sandwich or two which the children bring, while he listens to the songs and recitations they always learn for the occasion.

Miss M. S., Hepburnville, Pa.—For many years two brothers, with their families, spent Christmas at the old homestead. Now that the old home is broken up, Christmas is still a day for a family reunion. Each brother in turn invites the two families, with the children and grandchildren, for Christmas day. We do not attempt anything elaborate in gifts or in a Christmas dinner, but rather, by a joyous celebration, help to foster the true Christmas spirit.

There is always a Christmas tree, and the house is decorated with greens from the nearby woods. All the gifts received

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Other People's Business

The Romantic Career of the Practical Miss Dale

By HARRIET LUMMIS SMITH

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CHAPTER II. THE LOVER.

Thomas Hardin, trudging through the dusk of the spring evening, his shoulders stooping and his hands thrust deep into his pockets, wore an expression better befitting an apprehensive criminal than an expectant lover. As he approached the Dale cottage where the light of Persis' lamp shone redly through the curtained window, his look of gloom increased, and he gave vent to frequent and explosive sighs.

The sense of unworthiness likely to overwhelm the best of men who seek the love of a good woman, was in Thomas' case complicated by a morbidly sensitive conscience and ruthless honesty. To Thomas, Persis Dale represented all that was loveliest in woman-kind, but he would have resigned unhesitatingly all hope of winning her rather than have gained her promise under false pretenses. "I can stand getting the mitten if it comes to that," Thomas assured himself with a fearful sinking of the heart, which belied the boast. "But I can't stand the idea of taking her in."

When she knew him at his undisguised worst, it would be time enough to consider taking him for a possible better. Unluckily for his peace of mind, confession was more intricate and protracted than in his complacency he would have believed. It seemed impossible to finish with it. Whenever he nerved himself to the point of putting the question which had trembled on his lips for a dozen years, dark episodes from his past flashed into his memory with the disconcerting suddenness of a search-light and further humiliating disclosures were in order before he could direct his attention to the business of love-making. Sometimes Thomas felt that his reputation for uprightness was a proof of hypocrisy, and that his friends and neighbors would shrink away aghast if they suspected a fraction of his unsavory secrets.

Persis was alone when Thomas entered. Not till the last lingering tinge of gold had deserted the west, would Joel venture to leave the room barricaded against the hostile element. But at any moment now he might think it safe to risk himself down-stairs, and knowing this, Thomas resolved to waste no time in preliminaries.

"How's your sister and the children?" Persis asked, shaking hands and returning to her sewing. She offered no excuse for continuing her work, nor did Thomas wish it. There was a delicious suggestion of domesticity in the sight of Persis sewing by the shaded lamp while he sat near enough to have touched the busy fingers, had he but won the right to such a privilege.

"Nellie's well. Little Tom's eyes have been troubling him since he had the measles, but the doctor thinks it's nothing serious. Look here, Persis, I was wondering as I came along if you knew that I *choiced*."

Persis' lids dropped just in time to hide a quizzical, humorous gleam in her eyes. The rest of her face remained becomingly grave. "I may have suspected it, Thomas."

"It's a filthy habit," he said, inordinately relieved by her astuteness and yet with wonder. She looked up from her work to explain. "It's this way, Thomas. Sometimes when I go into the store I catch sight of you before you see me, and maybe one of your cheeks will be all swollen up as if you had the toothache. Then you slip into the back room, and come out in a quarter of a minute with both of 'em the same size. It's a woman's way, Thomas, to put two and two together."

Thomas' face was radiant. That weight was off his conscience. He had a right to proceed to more agreeable disclosures, undeterred by the fear of practicing deception on the noblest of God's creatures. It contributed to his joy that Persis had known of his weakness, and yet had not crushed him with her contempt. She had not even expressed agreement when he had called chewing tobacco a filthy habit.

"Persis," he began in his deepest

tones, "I was thinking as I came along—"

The stairs creaked and Persis interrupted him. "There's Joel. It makes it hard for him when the days are getting longer all the time. He'll be glad when we have to light the lamps at five."

Thomas was in a mood to wish that the village of Clematis basked in the rays of the midnight sun. He forced a smile to his reluctant lips as Persis' brother entered and magnanimously put the question, "How do you find yourself tonight, Joel?" though he knew only too well the consequences to which this exposed him. There was no surer passport to Joel's favor than to inquire about his health if one was also willing to listen to his answer. The people who said, "How do you do?" and immediately began to talk of something else were the objects of Joel's detestation, while his grateful affection went on to the select few willing to hear in detail his physical biography since their last meeting. Joel experienced the same satisfaction in describing the pains in his abdomen or an attack of palpitation that a bride feels in exhibiting her trousseau.

"I've nothing to complain of, especially when you take into account that I'd have been six feet under the sod by now, if I hadn't discovered that sunshine was poison to my constitution." A sort of draws all the vitality out of me, same as it draws the oil out of goose feathers. I'd have improved a good deal faster. Joel continued with sudden irritation, "if it hadn't been for Persis' carelessness in leaving the door open. You'd think that I had a good big life insurance in her favor, the way she acts. As the Frenchman said, 'Defend me from my friends, I can defend myself—'"

"I've always understood that sunshine was about the healthiest of anything," interrupted Thomas, reddening angrily at the criticism of Persis. "And if you want my opinion, you fool to me a good deal like a plant that's sprouted in the cellar."

The last thing Joel wanted was another's opinion. He continued as though Thomas had not spoken.

"And besides that, I've been eating too much meat. Science tells us that the human body is pretty near all water. Don't that show that most of the needs of the body can be supplied by drinking plenty of water?"

Thomas shook his head. "I'd hate to try it. When I'm hungry, I wouldn't swap a good piece of beef-steak for a hog'shead of water."

"You eat too much meat," Joel, extending an almost transparent hand toward his sister's caller, shook a bony forefinger in warning. "You're undermining your constitution. You're shortening your days by your inordinate use of animal food."

"Me! Why, bless you, Joel, I never was sick a day in my life."

"Well, that don't prove that you never will be, does it? And anybody with half an eye can see that you're not in good shape. Flesh don't show nothing. A man who weighs two hundred is the first to go under when disease gets hold of him. Your color, as like as not, is due to fever. How many times a day do you eat meat?"

"Well, always twice, and sometimes—" Joel groaned. "Rank suicide! Suicide just as much as if you put a revolver to your head. It sounds well to talk about prime cuts of beef and all that, but when you come down to cold facts, what's meat? Dead stuff, that's all. It ain't reasonable to talk of building up life out of death."

Persis' quick ear had caught the sound of stealthy movements in the adjoining room. She wove her needle into the seam, a practice so habitual that probably she would have done the same if the lamp had exploded unexpectedly, and crossing to the kitchen door, opened it without warning. A small untidy woman, the shortcoming of her appearance partly concealed by the old plaid shawl that enveloped her person, dodged away from the key-hole with a celerity perhaps due to practice.

"It just struck me that there was more voices than two," she explained with self-accusing haste. "And I didn't want

to intrude if you was entertaining company. Sounded to me like Thomas Hardin's voice."

"Yes, it's Mr. Hardin. Will you come in, Miss Trotter?" Persis' invitation lacked its usual ring of cordiality.

"Oh, I wouldn't want to intrude. But I says to Bartholomew this very day, 'I'm going to run over to Persis Dale's after supper,' says I, 'to see if she can't let me have some pieces of white goods left over from her dressmaking.' You're doing a good deal in white this time of the year, as a rule," concluded Mrs. Trotter, a greedy look coming into her eyes.

"Miss Trotter, I always send back the pieces, even if they're no bigger than a handkerchief. If anybody's going to make carpet rags out of the scraps, I don't know why it shouldn't be the people who bought and paid for the goods."

"And that's where you're right," Mrs. Trotter agreed, with the adaptability that was one of her strong points. "There was Mattie Kendall, now, who kept up her dressmaking after she married Henry Beach. Well, she set out to dress her children on the left-overs, and it went all right while they were little. But Mattie got grasping. After her oldest girl was as long-legged as a colt, she'd send word to her customers and say that they needed another yard and a half or two yards to make their dresses in any kind of style. Of course it got out in time, and everybody who wanted sewing done went to a woman in South Rivers. I often say to Bartholomew that honesty's the best policy, even where it looks the other way round."

During the progress of this moral tale, Persis' thought had been self-accusing. She reflected that curiosity is not among the seven deadly sins, and that if Mrs. Trotter found in listening at key-holes any compensation for the undeniable hardships of her lot, only a harsh nature would grudge her such solace. Moreover, ingrained in Persis' disposition, was the

inability to hold a grudge against one who asked her a favor.

"I don't know, Miss Trotter, but maybe I've got some white pieces of my own that aren't big enough for anything but baby clothes. I'll look over my piece-bag tomorrow. If there's anything you can use you'll be welcome."

Mrs. Trotter expressed her appreciation. "With all the sewing I done when Benny was expected, I did think I was pretty well fixed, come what might. I didn't reckon on the twins, you see. And then when little Tom died, they laid him out in the embroidered dress I'd counted on for the christening of the lot. Not that I grudged it to him," added the mother quickly, and sighed.

This had the effect of dissipating Persis' sense of annoyance. "I'm pretty sure I can find you something, Miss Trotter. And I'll speak to one or two of my customers. Some of 'em may have things put away that they're not likely to want again."

Mrs. Trotter received the offer with a dignity untainted by servile gratitude. "Me and Bartholomew feel that in raising up a family the size of ours, we're doing the community a service. So we ain't afraid to take a little help when we happen to need it. And by the way, if you should find some of the white pieces you was talking about, maybe you wouldn't mind cutting out the little slips and just stitching 'em up on your machine. The needle of mine's been broke this six months, and anyway, something's the matter with the wheels. They won't hardly turn."

"Need oil, probably," commented Persis. She knew she was wasting her breath in making the suggestion. The shiftlessness which left the sewing machine useless junk in a family of eight was a Trotter characteristic. If Bartholomew could have appreciated the value of machine oil, he would have been an entirely different man, and probably



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M. D. GORE
P. O. Box 1321, Philada., Pa.

December 15, 1916.

THE PRACTICAL FARMER

★ 467

able to support his family. In view of this, Persis felt that she could do no less than add: "To be sure I'll stitch 'em up. 'Twon't take much of any time."

"Now I'm not going to keep you a minute longer. I guess Thomas Hardin don't come here to talk to your brother the whole evening." Mrs. Trotter smiled pleasantly, but with a distinct tinge of patronage, the inevitable superiority of the wedded wife to the woman who has carried her maiden name well through the thirties. And indeed in Mrs. Trotter's estimation, the hardships of her matrimonial experience were trivial in comparison with the unspeakable calamity of being an old maid.

After Joel was once fairly launched on the subject of hygiene, it was difficult, as a rule, to introduce another topic of conversation under an hour and a quarter. Persis was almost startled, on her return, to find the two men discussing an alien theme. More surprising still, instead of sulking over the curtailment of the dear privilege of self-dissection, Joel was plainly interested.

"It's one of the games where you can't lose, if you take their word for it," Thomas was explaining to his absorbed listener. The company begins to pay you interest on your investment just as soon as you hand over the money, six per cent. every year up to the time the orchard gets to bearing. Then it goes up little by little, and by the tenth year they guarantee you twenty-five per cent. Even that doesn't cover it. They say that orchard owners in the same locality are making as much as a hundred per cent. most years. Anybody who could spare a few thousand would be sure of a good income for the rest of his days."

"But there's the off years," objected Joel, a crackle of greed in his high-pitched voice. "There's not going to be any off years the way those fellows figure. They say that by thinning out the apples when the yield is heavy, they can be sure of a crop every season." Thomas' gaze wandered to Persis who had resumed her seat and taken up her sewing. "We're talking of a chance to put your money where it will get more than savings bank interest," he said, resolved that Joel should not monopolize every topic of conversation. "The Apple of Eden Investment Company, they call it."

"I heard you say something about twenty-five per cent.," returned Persis, sewing placidly. "Most too good to please me."

"Now if that ain't a woman all over," Joel interjected excitedly. "The toe of a stocking is a good enough bank for any of 'em, and as for using foresight and putting a little capital where it'll bring in an income for your old age, you'd think to hear 'em talk, that such a thing was never heard tell of. If I'd had the handling of the money that's come into this house for the last twenty years, we'd have been on Easy Street by now. But Persis has the kind of setness that doesn't take no count of reason. And as the poet says:

"He is a fool who thinks by force or skill
To turn the current of a woman's will."

Thomas, purpling with resentment, addressed his next remark to Persis. "I don't guess our folks would take so much stock in all these fine promises if there wasn't a Clematis boy secretary of the company. I guess you remember him, Persis. Ware, his name was. Justin Ware."

"Yes, I remember him." An abrupt movement on Persis' part had unthreaded her needle. She bent close to the lamp, vainly trying to insert the unsteady end of the thread into the opening it had so lately quitted.

"I've been telling you right along you needed glasses," triumphed Joel. "And to keep on saying that you don't, ain't going to help the matter. 'When age, old age comes creeping on,' as the poet says—"

"I don't need glasses any more than you need a crutch." The denial came out with a snap. Persis Dale, patient to the point of weakness, enduring submissively for twenty years the thankless exactions of her brother, proved herself wholesomely human by her prompt resentment. "My eyes are as good as they ever were," she insisted, and closed the discussion if she did not prove her point, by putting her work away. Secretary of an investment company making such golden promises! That looked as if at last fortune had smiled on Justin Ware. The two men had the talk to them-

selves. Persis' absorption was penetrated now and then by references to the miracles wrought by scientific spraying and pruning, or the possibility of heating orchards so that late frosts would no longer have terrors for the fruit grower, sober facts which the literature of the Apple of Eden Investment Company had enveloped in the rosy atmosphere of romance. Like many people who have never made money by hard work, Joel believed profoundly in making it by magic. His pallid face flushed feverishly, and his eyes glittered as he discussed the possibility of making a thousand dollars double itself in a year.

It was ten o'clock when Thomas again had the field to himself and in Clematis only sentimental visits were prolonged beyond that hour. Thomas' opportunity had arrived, but with it unluckily had come the recollection of a misdeed for which he must receive absolution before the flood-gates of his heart were opened. "Persis, do you remember that old Baptist minister who lived opposite the schoolhouse when we were kids? Elder Buck, everybody called him."

With an effort she set aside her own recollections in favor of his. "Oh, yes, I remember. The one whose false teeth were always slipping down."

"His picket fence was all torn to pieces one night. He had a way of calling names in the pulpit, the elder had,—children of the devil and that sort of thing—and it got some of the boys riled. And to pay him back, they tore down his fence, Persis, I—I was one of those boys."

He looked at her appealingly and felt his heart sink. Persis' eyes were low-

ered. Her face was grave and a little sad as he looked at a friend's unworthiness. Thomas gulped. Well, it was only what he had expected all along. A woman like Persis could not be asked to overlook everything.

"Good night, Persis," he said huskily, and he thought it more than his deserts when she answered him with her usual kindness, "Good night, Thomas."

(Continued next issue.)

Girls and Boys Bring Greatest Joys

W. E. VAPLON.

"Spuds is the crop," said Farmer Jones, "the crop that brings the silver bones—the kale for which the farmer hones." "No sir," said Sweet, "give me the beet. It pays for all the things we eat, for shoes to fit the children's feet; the beet pays for the light and heat and puts us all on easy street." "You're both mistook," said neighbor Lee, "for if you'd look you'd surely see there's gold in wheat; wheat's what made me. Whatever any one can see in any other crop, beats me; give me the wheat," said neighbor Lee. "Sure wheat's all right," said old man Wood. "No use to fight cause spuds are good and beets ain't bad, they bring the mon and digging them is sure some fun; the beet man's work is never done. But as for me," said old man Wood, "Alfalfa blossoms sure smell good. Alfalfa's king of all the crops, it

beats the spud and wheat and hops." "I see you're just a little off, all money mad," said Deacon Goff. "At spuds and beets I can but scoff and ask you, gentlemen, to doff your beavers to the crop that's worth more than all other crops on earth. I'm speaking, men, of girls and boys, that bring the farmer sweeter joys than Henry Ford with his tin toys. Give me the kids and take your wheat and hay and spuds and sugar beet!"

Colorado Agri. College.

Cheap Gains on Poultry
It is just as important to fatten chickens sent to the market as it is to fatten hogs or beef cattle. Students in the Poultry Department of the University of Missouri found in recent tests that chickens will gain about 23 per cent. in 12 to 14 days' feeding. The grain required to put on a pound of gain was approximately 3 1/4 lbs. The cost of a pound of gain with corn meal at \$2.25, bran \$1.50, middlings \$1.75 and sour milk at 20 cents per 100 pounds, was 8 cents.

The ration consisted of corn meal, 7 pounds; shorts, 3 pounds; and bran, 1 pound. To every pound of this mixture 2 pounds of sour milk was added. This wet mash was fed twice daily. The length of the feeding period, which was ten minutes the first day, was increased a minute a day as the period advanced.



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are really nothing more than several walks laid side by side. Concrete feeding floors are very profitable. They save feed, manure, and labor. Easily cleaned and disinfected; they are free from mud and filth, hence kept sanitary. Many diseases and consequent loss of stock are prevented.

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CONCRETE FOR PERMANENCE

How to Trap

This is the last of a series of three articles on the subject of "Fur Trapping for Farmers." We trust that they will be the means of enabling a lot of our readers to profit by the high fur market which exists this year.

In our preceding articles we have given the trappers some valuable advice on how to handle their furs and prepare them for market. Before this can be accomplished, however, one must know how to trap, especially the leading fur bearing animals, such as muskrat, mink, skunk, raccoon, etc.

Many thousands of dollars could be saved each season if the average trapper knew how to proceed. Some people think that all they have to do is to buy a trap and set it and the animal will just naturally run into it. If you do not believe that trapping is an art, you should have a chance to compare some of the fur collections which come from different trappers throughout the country. It is a pleasure to see a collection of one hundred or more muskrats with not a single one shot or damaged, a full-furred fox which has not been over-stretched, or a batch of nice, prime skunk. On the other hand, a batch of poor furs cannot but reflect on the trapper's method of handling them, and if he knew a little more about how to trap, he would make a great deal more money.

Let us consider first the muskrat, one of the most profitable to the trapper. The muskrat, in point of numbers, is easily the leading article in the fur industry. In years gone by when muskrats sold for two and three cents a pelt, it was hardly worth while for the trapper to take the time and energy to put them up in first-class shape. But now things have changed. A man can make more money out of muskrats than probably any other fur-bearer, and the way he traps and prepares his muskrats is a big criterion as to the amount of money he will make. In the first place, muskrats must be trapped. They cannot be shot, because a shot rat, no matter how good the fur is, must necessarily be graded into the second or third class. If you are going to start out with a new trap, all the odor of fresh steel must be removed. This is best accomplished by smothering trap in a smoldering fire, to which green leaves have been added to smother the flames, and give the trap an outdoor scent. Then the trap should be well oiled and tested before setting. Avoid the presence of human scent on the trap by using gloves whenever the trap is handled. These are little points which every trapper ought to know, and if you use them you will be surprised what a difference it will make in your catch. The muskrat lives in the water. His house, especially in the winter, is in the marshes, therefore your trap should be set under the water. Bait is necessary unless food is very scarce. Then you can use an apple, parsnip or a small portion of muskrat flesh. The bait should be placed on a stick directly over the trap, so that the animal will have to reach over the setting to get at the bait, and be sure that your trap is fastened well to the stake, so that the chain will lead the animal into deep water and drown him. If he can get his breath he will gnaw off or twist off a leg and get away. Many muskrats have been lost to the trapper in this way. As soon as the animal is caught it should be taken from the trap, and the fur removed immediately. The best time to trap muskrats is in mid-winter and spring, so don't be in a hurry to bag all the rats in your neck of the woods at the present time.

In recent years the skunk has come to be one of our most widely used furs. The black marten, as it has been called, has found its way into the most fashionable society and so the skunk, the former's pest, the menace to the chicken coop, has become perhaps the most valuable addition to the trapper's collection. You will not trap as many skunks as muskrats this season, but if you know how to trap your skunks you will find that in the end they will bring you a great deal more money.

The skunk is not a difficult animal to trap. Its offensive odor is the only disagreeable task in taking them. The same precautions should apply in the preparation of the traps as in the case of the muskrat. The traps should be placed near the holes of the skunks out in the fields, or near an old fence post. They should be covered with loose earth or leaves, and the bait scattered around them. A dead hen, a portion of skunk carcass, or a rabbit can be used for bait, and by all means do not shoot the animal after he is caught in the trap. If you are cautious, you can sneak up on him and kill him with a blow on the head.

The mink is considered the trapper's prize. If you can bag a dozen or so good minks in a season, the proceeds of your collection will be materially increased. The way you trap and prepare your mink goes a long way toward determining the value of the skin. They can be taken either in the water or on land, most trappers preferring the latter method. The mink is more cunning than either the muskrat or the skunk, and you must be careful in placing your sets to catch this wary animal. The best place to set your trap is at the mouth of an old mink hole, near the bank of a stream. Bank the trap on three sides with stones, bark or old rotten wood, and place the bait beyond the setting, so that the animal will have to step on the trap to get the bait. It is best covered with old leaves or rotten vegetables, and in winter the bait should be smoked to give it a stronger smell.

The best way to trap the raccoon is to set the traps along the paths they make into the fields or near the bank of a stream. They are not as cunning as the mink, and they rarely pass a good baited trap without being taken. An ear of corn stuck in the mud, or a fish, is the best bait for a raccoon, and be sure that your trap is large enough, for the raccoon is a fairly strong animal.

In trapping civet cats, pick out a place where the animal usually haunts, such as an old garbage hole. Cover the trap well, and place the bait over the trap. Civet cats like rats and mice, therefore this is the best bait we know of.

In some districts wolves are so abundant that they make up almost the entire collection of the trapper. In addition to the bounty on these animals, their fur brings a good price, and so you should take more pains in trapping and preparing your wolf. The best way to trap them is to take a piece of fresh meat and drag it along the ground for a mile or so. Place a trap about every 200 yards, and be sure that it is well fastened to a good stout post or tree. Be sure that your traps are well covered with sand or powdered wood, and place the bait in small pieces all around the trap. The best bait to use is fresh meat, and pork meat is a very good scent.

In trapping the beaver one should be careful not to frighten away the entire family. This is best accomplished by setting the traps some distance away from the beaver hut, where the animal

is liable to go alone for food or bark. The habits of the beaver are essentially the same as the muskrat, and so the same methods may be followed out as in the case of the muskrat. Beaver castors make the best bait.

The wild cat, lynx cat and badger are all trapped in essentially the same way. The traps are best placed near an old tree and covered with snow or old leaves. For the wild cat the banks of a stream is the place to make your setting. The best bait for wild cat is a hare, a grouse or a wild cat carcass, and the badger likes the ground squirrel best.

The catch this season promises to be better than ever before, and the man who takes a little pains with his trapping will be well repaid at the end of the season.

The Best Way to Remove Stumps

In these days when the efficiency of European farmers is being held up as an example, every way of reclaiming waste ground is eagerly investigated. In this connection the old controversy comes up between the stump puller and the explosive manufacturers. Whereas they used to fight each other they now recognize that best results are obtained from working together. The discovery of this fact was brought about by the University of Wisconsin when they induced three railroads in that state to equip a demonstration train and go into the cut-over land to show the settlers how to clear it by the cheapest method. The demonstrators had hardly begun their work before they found that the cheapest way to get rid of the stumps was by using dynamite to break the anchor roots, loosen and split them, shake off much of the dirt and then finish the job with the stump puller. On account of the demand created for the raw materials by the European war the price of dynamite has gone up lately to unprecedented heights. By the combination method described a low grade and less expensive dynamite is used, thus materially reducing the cost. Splitting the stump and shaking off much of the dirt also makes it easier to pull and saves a lot of labor by not having to fill a large hole left in the ground. It also makes a great deal lighter work for the men, machine and horses, and at the same time makes new land at the minimum cost.

During the first month, which ended December 1st, of the New Jersey Agricultural Experiment Station Egg Laying and Breeding Contest, at Vineland, the highest individual production was made by a Barred Plymouth Rock hen which laid 28 eggs during the 30 days. During the month 96 pens laid out of the total 100. The total number of eggs laid during the month of November was 8,433, or

28.11 per cent. production. There were 14 pens of ten birds each which laid better than 50 per cent. production during the month. Of these 10 were Leghorns, 2 were Wyandottes, 1 was Barred Plymouth Rocks, and 1 White Plymouth Rocks.

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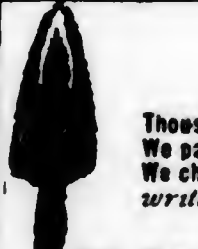
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The Practical Farmer Live Stock and Dairy Section

EDITED BY W. H. TOMHAVE

Holsteins at the National

By A. G. MORRELL

This is the fourth of a series of articles on the leading dairy breeds exhibited at the National Dairy Show at Springfield, Mass., written by our special representative in the show ring. The Guernsey article appeared November 1st, the Ayrshire November 15th and the Jerseys December 1st.

Breeders of the Black-and-Whites claim that they are the most popular dairy cattle in the country; and the immense crowds, fully ten thousand people, that filled the judging arena at the National Dairy Show in Springfield, Mass., while this breed was being judged by W. S. Moscrip, of N. St. Paul, Minn., would seem to bear out their contention.

Time was when type counted for very little with this breed, milk being what they were bred for, and the more milk they gave the better they were prized, no matter if their rumps sloped like a toboggan slide; or their udders were cut between teats, shaved off in front or deficient in rear; or if their backs were dropped behind their shoulders or in the middle. But that time is past, as any one would admit who stood at the ring at Springfield and saw the smooth-topped, broad-shouldered, deep-barreled beauties, male and female, lined up for judgment. Udders have improved, too, but not as much as they can. There are still too many bags with poor soles, and with deficiencies in the shape in front and with badly placed teats. These defects can and will be remedied by selection. It is a great breed, wonderful for milk production, stamina and type, and has been the backbone of the dairy industry for the last decade in the East.

With the advent of the payment for milk on the fat basis, this breed has been deposed from top place in the dairy business, as no matter what fanatics say (and there are a few of them in the great mass of breeders) it is not a butter-fat breed, and to make more money in the markets of today the dairymen must have more fat in their milk, and naturally will add to their herds Jerseys or Guernseys to get it. However, there are many, many thousands of the splendid Holsteins in the barns, and their admirers turned out in force to do them honor.

Western breeders took the high places in this breed, too, the first prize on aged bulls going to Iowana Farms, Davenport, Ia., on Oak DeKol Ollie Homestead, a wonderfully handsome 4-year-old bull who was crowded hard for first place by 10-year-old Paul Calamo Korn-dyke from R. E. Haeger's herd in Algonquin, Ill., and Pietertje 22nd's Son, seven, from Woodcrest Farm, Rifton, N. Y., who were second and third, respectively.

The bull calves in this breed were a wonderful lot, and deserve especial mention, as it is from their ranks that are recruited the sires who build up the dairy herds of the country. Many a farmer has been pulled out of the ruck of poor dairying by a registered bull calf.

The nineteen aged cows made a most attractive sight, and here it was a close

fight between Minerva Beets, 11 years old, belonging to R. E. Haeger, and Paula of Chagrin Falls 3rd, 8 years old, belonging to Woodcrest Farm. The former won, having more heart girth, better finish and a more level back, as well as a fine wither.

The showing of heifer calves in this breed was something to wonder at, 28 in one class and 18 in another being led out, all so good that it is a wonder that the judge ever managed to pick out six that he could say were the best. They came from East and West, Connecticut, Massachusetts, Iowa, New Hampshire, New York and Illinois, and set a new standard for a large number who saw them.

If all the seed sown (in the way of literature) bears fruit, there will be a large harvest in the Holstein business; for the Association's booth, in charge of Messrs. Wing Smith, F. P. Knowles and Severance, was crowded all the time.



Oak DeKol Ollie Homestead. Grand Champion Holstein Bull

with seekers after information. They got whatever they asked for, and more. In fact, the Holstein booth was a sort of life-saving station, the very toothsome lunches in boxes and the hot—really hot—coffee, milk and butter milk served there by the Holstein Association, entirely as a matter of friendliness, being a godsend to many.

Just a step from the Holstein booth was the door to the exhibit of the U. S. Department of Agriculture, with nine cows who were examples of what a good cow could do and what a poor cow would not do in the way of production. All were fed alike and cared for in the same manner. The three poorest cows averaged as follows in yearly production and profit:

Cows	Lbs. milk	Lbs. fat	Profit
No. 1	3823	154.1	\$15.46
No. 2	4257	175.4	22.55
No. 3	4279	198.8	31.46
Average for the three	4119	176.8	23.22

(Concluded on page 471)

The Meat Product of Sheep as Affecting Producer and Consumer

By W. H. TOMHAVE

The following is a paper presented by W. H. Tomhave, of Pennsylvania State College, our Live Stock and Dairy Department editor, at the Sheep Conference held in Philadelphia, November 23-24, under the auspices of the Philadelphia Wool and Textile Association. It presents a side of the sheep problem which is often overlooked. The demand for lamb has prevented natural increase in the number of sheep, and to keep a flock for only their wool and lamb returns has not always proved profitable. To place the industry on a firm basis the value of mutton must be appreciated enough to make a profitable market for it. As the proceedings of the Sheep Conference will not reach the majority of our readers we are publishing this part for their benefit.

Mutton and lamb have been used as articles of food since ancient times. They

the report of the Bureau of Animal Industry for 1911. The amount of meat consumed per capita at present may have changed slightly since that time, but these figures will serve to bring out the point which I wish to emphasize. The per capita consumption per year of dressed meat, under normal conditions, in the United States is 172 lbs., in the United Kingdom 119 lbs., in Germany 113 lbs., and in France 80 lbs. The amount consumed is divided as follows: Beef, United States, 80 lbs. or 40 per cent. of the total consumption; United Kingdom, 56 lbs. or 47 per cent. of the total consumed; Germany, 36 lbs. or 32 per cent.; France, 37 lbs. or 47 per cent. Thus it will be seen that while there is a difference in the amount of beef consumed in those countries the per cent. of the total consumed per capita, is the same in all countries except Germany.

In the United States the mutton and lamb consumed is 6½ lbs., or approximately 4 per cent. of the total; United Kingdom 26 lbs., or 22 per cent.; Germany 2½ lbs., or 2 per cent., and France 9 lbs., or 11 per cent.

The amount of lamb and mutton consumed is much lower than in the United Kingdom and 4 per cent. lower than in France, while in Germany the amount consumed is less than in the United States. I do not understand why the amount of lamb and mutton consumed should be so low, but it may be due to prejudice and the lack of proper trials by the meat eating public.

I have seen the time when other meats were selling higher than lamb and mutton and yet it did not seem an inducement to increase the demand for this food product. My reason for the low consumption of lamb and mutton is that sheep have not been kept in enough small flocks in the East and Central West, so as to make it possible to readily secure the lambs or mature sheep for slaughtering on the farms. In the past sheep have been produced largely on western ranges, and the fattening has been done at sheep feeding centers from which they have been shipped to the large packing centers for slaughtering and distribution. On the other hand, pork and beef have been produced on nearly every farm in such numbers as were necessary for the meat supply on the farm home. There is no economic reason for such a small consumption of lamb and mutton, as it has fully as high a per cent. of edible meat as beef, as both contain 25 per cent. of non-edible portions, such as bones and cartilage.

The decrease in the number of both cattle and sheep per 1000 population in the United States has been great during the past 35 years. This decrease is still continuing and will not improve unless something is done to insure greater permanency to market conditions. It will also be necessary to assure our farmers a permanent market and outlet for their wool and mutton.

I believe that we have before us a great

opportunity to build up the sheep industry of this country. In doing so we must give just as much consideration to the meat phase as to that of wool production. Wool will now have to become a by-product of the industry, as it is not economical under present conditions to keep a flock of sheep alone for the wool produced. We will have to use a type of sheep that will give us a fair return of both wool and mutton. This brings up the question of the type of sheep to produce. While we don't have sufficient data to advocate a definite line to follow, I believe that the use of rugged, smooth-bodied, fine wool ewes, bred to mutton rams will produce the most desirable and the most profitable type of lambs. Such ewes are usually hardy and produce a desirable fleece, and such lambs will always be in demand on the market, and will do well in the feed lot.

I believe that we are justified in advocating more sheep for the farm in the United States as a means of increasing our meat supply. There is no animal upon the farm that can be developed for market or for home use in a shorter period of time than a good flock of lambs. If we can get farmers to carry small flocks of sheep it is not only a means of supplying the country with more meat, but it is also a means of increasing the amount of wool produced. We must not lose sight of the fact that a very marked change has taken place in our farming conditions during the last few years. The increase in price of land, labor and general equipment has made more intensive farming necessary. It has also forced farmers to utilize the by-products on farms and convert them into a finished product. A flock of sheep must be regarded as a by-product upon a general farm, due to the fact that they require very little labor, shelter and expensive feed. The development of our flocks must be by increasing the number of farms upon which sheep are kept, rather than the number of sheep upon the farms where flocks are now maintained. Farmers who now have a flock of sheep are well satisfied that they are a valuable asset. Our work with such men should be to get them to use better rams and improve the meat and wool producing qualities. Sheep return to the farmer two cash crops per year, one in the form of the lamb crop which is sold on the market or used for home consumption, and the other, the wool crop from the ewes and rams, which will aid materially in paying for the cost of maintenance. The producer has another advantage, in that at the time when the most labor is required he is seeking work for the man on his farm. Sheep require little or no care during the summer when the general farm operations must receive attention. If a producer will adapt a flock of sheep and keep them as a by-product on the farm, he is bound to be successful with them, if they are given the care and attention which they rightly deserve.

From an economic standpoint, both the producer and consumer will be benefited through a greater production of sheep. We have reached an age when it becomes necessary to produce much of our meat from feed that can not be used for human consumption. There is no animal upon the farm that can utilize roughage and crops of such character to a better advantage than a flock of sheep. By this I do not wish to convey the impression that sheep do not require feed to get the best results. They must receive proper attention and must have a liberal supply of feed in order to convert into a finished product material that would otherwise go to waste. They are often spoken of as the scavengers of the farm, as they will consume a large

per cent. of the weeds that are found in abundance in most sections. They can also be made use of to clean up along fence rows and other places where it is impossible to pasture other animals. They will convert such waste products into mutton and wool, and in this way become a valuable asset on the farm. When used for this purpose they can be kept at practically no expense to the owner, and the increase in the weight produced in the form of mutton and wool is a distinct advantage.

The cost of meat produced in the form of mutton by sheep is usually lower than that of cattle. Experiments show that it requires approximately 400 pounds of grain and an equal amount of roughage to produce 100 pounds of gain. The amount of grain can be reduced and roughage increased if conditions are favorable. Cattle, on the other hand, will require a somewhat larger amount of both grain and roughage to produce the same amount of weight. When compared with hogs they will produce a finished product on a different type of feed, as hogs must be fed almost entirely upon grains, many of which can be used as a human food. This means that the producer has the advantage in that he can prepare for market or have a finished product of wool and mutton from crops that should not be sold from the farm. While this may seem like a one-sided advantage in favor of the producer, it can not help but be of value and benefit to the consumer in getting his supply of meat.

There is no class of animals kept upon the farm that is considered as healthy as sheep. We find practically no cases of tuberculosis among them, and the number condemned in our packing houses from other disease is lower than that of cattle and hogs. This should be regarded as an inducement for a more universal consumption of lamb and mutton. In many rural communities we find a scarcity of fresh meat. This is also true of many sections in our cities. There is no class of animals better adapted to supply the home with fresh meat, especially during the summer, than a flock of sheep. It is possible for a few farmers to group together and slaughter a lamb once or twice a week and divide it for their own use. It can all be utilized before it has a chance to spoil. When handled in this way it becomes a cheap source of fresh meat and will do much to overcome the constant supply of cured meats found in many sections.

We have started an active campaign in Pennsylvania, to secure more information concerning wool and mutton production. Many of our county men are com-

pling data that will be used in furthering this work. We are securing from them at this time, information concerning the problems with which mutton and wool producers are confronted. This information will be useful as a basis upon which to lay our plans to aid the farmers in their work. We hope to assist them in their problem of management and help them in every way possible to increase the return from their products.

We must look at the whole sheep problem from a broad point of view. I believe that sufficient interest has been aroused to awaken our farmers to the importance of the sheep industry of this country. They fully realize the advantage of a good flock of sheep if the finished product can be disposed of on a strictly merit basis. I believe that we are all agreed that in the sheep industry, wool and mutton are inseparable and that they should be sold on their merits. To put the proposition on a merit basis it will be necessary for our wool buyers, and our mutton and lamb buyers to make a discrimination on the basis of quality. This is done to a large extent on the large wool markets and the large central markets for lambs, but it is not done in local buying. There is no inducement for the farmer to produce a better quality of wool or mutton unless he is to receive financial reward for his efforts. The use of a better class of rams, both for wool and mutton production, will do much to build up the present industry, provided ample remuneration is made for the use of such rams. I believe that we have before us a big problem of education. First to convince the farmers of this country of the advantage and value of a better class of rams. There is nothing that will do this more effectively than to pay a higher price for the wool and mutton from such breeding. Second, to educate local buyers in the art of properly judging fleeces and to understand the value on the wholesale market of the different kind of fleeces; this can be done through publicity work, wool exhibits and a sharp discrimination on the wholesale market. Third, to educate local buyers, so that they will buy lambs on the basis of quality. This also must be accomplished through publicity work, local exhibits and a sharp discrimination on the central market. Fourth, to get our farmers to more fully understand the market requirements for both wool and mutton. Should it be necessary, they could be posted on the value of co-operative marketing of their finished product. Anything that can be done along these lines will do much to benefit both the producer and consumer.

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"The Silo that Lasts for Generations"
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Large strains all ages, mated not akin, 5 week pigs. Pigs, service boars, sows and Beagle dogs. Grade Guernsey calves and poultry.

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Registered O. I. C. pigs, July and September farrow, females only, ten and fifteen dollars. **ARTHUR FREEMAN, Palaski, N. Y.**

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FORDHOOK SCOTCH COLLIE KENNELS—Puppies of choicest imported blood, full pedigree, at prices the farmer can afford to pay. W. Atlee Hurpe & Co., Burpee Buildings, North 4th St., Phila., Pa.

Pedigreed Airedale pups for sale at reasonable prices. **Emerson Point Farm, McDaniel, Md.**

Holsteins at the National

(Concluded from page 469)

The best three averaged as follows:

Cows	Lbs. milk	Lbs. fat	Profit
No. 4	10,008	460.1	\$90.84
No. 5	8,646	362.0	78.97
No. 6	8,445	346.5	68.38
Average for the three	9,033	389.5	75.80

The grain fed was a mixture of 30 lbs. hominy, 10 lbs. wheat bran, 30 lbs. distillers' dried grains, 5 lbs. linseed oil meal, and 1 lb. of this mixture was fed to every 3 lbs. of milk. These cows were all grades; and it was patent that the nearer the cow approximated the type of the cattle being shown out in the ring, the better she did in her work. The cows which did worst were undersized, lacked in belly, in breadth of hips and size of bag—in fact, they were typical "robber" cows, and the burglar alarm that will show them up always is the record sheet, as this demonstration showed to many a dairyman who had always looked on keeping tab on his cows' daily yields as a waste of time. It's a safe bet that there are a lot of record blanks being tacked up in barns all over the country, where they never were seen before the National.

In the same exhibit the formation of co-operative bull associations was advocated, and figures given to show that the cost before forming one of these clubs in a certain section, per year to each member, was \$29.81 for the use of a bull valued at \$89.44 as his proportion of the original cost of the bull; while after the organization of the bull club the cost per year to each member was \$7.50 on a valuation of \$240. Cost of keep was not considered. Three years was the limit of time for one bull.

This question of bull clubs was taken up by B. M. Rawl of the Dairy Division of the U. S. Department of Agriculture, during the course of the show, and he said that some advocated the gift of pure-bred bulls to groups of farmers, but he questioned the wisdom of this course. "It is very hard," he said, "to make a hard-headed farmer place a high value on something which is given away. It is much better to sell bulls at reasonable prices." The idea of the use of a good registered bull, by a group or club of farmers is a sound one, and is spreading all over the dairy sections of both East and West. A scrub bull is worse than no bull, but there are many scrub bulls, too many, on our dairy farms. Much missionary work on the bull club question was done at the National, and will result in the formation of many organizations of this kind, to the advantage of the dairy industry.

Growing Pork at a Profit on High Priced Feed

L. A. WEAVER.

The higher the price of grain the more care is required in feeding operations. It is not profitable to feed corn alone. It should be supplemented with some feed like tankage or linseed oil meal.

Tankage has perhaps received more attention by experiment stations and by practical feeders during the last few years than any other protein supplement. Its composition makes it almost an ideal supplement to corn for hog feeding. The high protein content, derived from an animal source, along with a high mineral or ash content makes it particularly valuable when fed with corn, which is noticeably lacking in these nutrients. It would be impossible to discuss here in detail the enormous amount of experimental data upon this

subject, since most of the state experiment stations, including the Missouri Station, have published the results of trials made with tankage. The data reported, however, shows that tankage is in every way one of the best supplements to corn for hog feeding.

Experimental work shows that better results are obtained with the breeding herd when some tankage or meat meal is added to a corn ration. Not only are more pigs farrowed per litter, but those farrowed are stronger. It has been found, for example, that gilts fed corn alone farrowed an average of 7.6 pigs per litter, as compared with an average of 8.5 farrowed by the gilt: fed a ration of corn 10 parts, tankage or meat meal 1 part. Sixty-eight per cent. of the former were strong, as compared with 98 per cent. of the latter.

Not only does the addition of some feed like tankage increase the efficiency of the breeding herd, but it also ma-

bed. That was all wrong, but I knew no better then. I also fed them nearly all corn, and too much of it. That was another error. They became entirely too fat, a thing that should never be allowed. Well, between bad housing and improper feeding, I only secured 24 live pigs at farrowing time, when I expected from 50 to 60.

My plan now is to keep each sow in her own lot with as much room for exercise as possible, and to sleep alone. This is where the colony houses come in handy. I want the small houses dry, well ventilated and strictly clean and free from dust. This means fresh bedding quite often, but it pays.

As to the food they should have, I recommend very light feeding with corn. Indeed, the plan I find best is to allow some grain, but in the form of a mixture with bulky material.

Give each sow twice a day what she will clean up well of a mixture of finely



Minerva Beets
Grand Champion Holstein Cow at 10th National Dairy Show
Owned by R. E. Haeger, Algoquin, Ill.

terially decreases the time required to get the pig to a marketable weight. This is shown in a list at the Missouri Agricultural Experiment Station, where one lot of hogs for 120 days, on a ration of corn 10 parts, tankage 1 part, gained on the average 1.15 pounds per head per day, while a similar lot fed on corn alone gained only 1.11 pounds. This would indicate that it would require about a month longer to make a 100-pound shoat weigh 250 pounds, if corn alone was used as the ration than when a ration of corn and tankage was used. In the trial mentioned above it required 436.4 pounds of corn plus 43.6 pounds of tankage to produce 100 pounds gain on the one hand, as compared with 580 pounds of corn where corn alone was used.

Missouri College of Agriculture.

"The International"

As we go to press The International Live Stock Show is holding its final sessions at the Union Stock Yards at Chicago. It has been a wonderfully successful and impressive show—probably the greatest ever held in this country, both in quantity and quality of entries in nearly all classes; the attendance, too, has been gratifying and all sections of the country have been represented by enthusiastic farmers and stockmen; not only have regular trains into Chicago been crowded, but special trains have been run from several sections—one of these "specials" bringing over 600 farmers from North Dakota, headed by that state's "farmer governor-elect." Numerous meetings of agricultural organizations have been held in Chicago during the progress of the show, and it is safe to say that never has a greater number of the "live wires" of agriculture been gathered together at one time in a single city in this country.

An article concerning the show from the pen of our representative will appear in our January 1st issue.

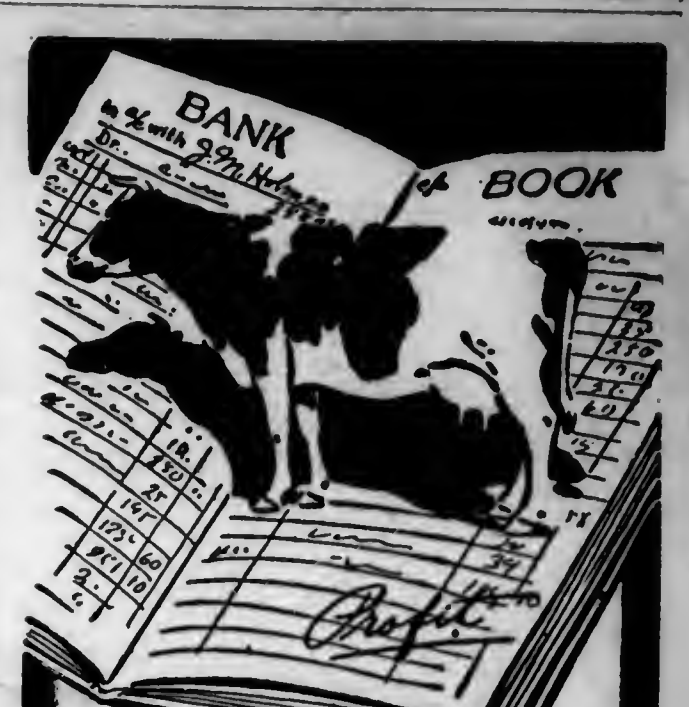
Brood Sow Management

W. A. GRAHAM.

Now that hogs are high, with a prospect of future high prices, it should be the aim of every farmer to grow and fatten all the hogs possible.

My first effort to widen out in hog growing, quite a good many years ago, was a bad failure in securing a big lot of spring pigs. I learned so much from my bad management and feeding of brood sows, I afterwards avoided the same thing, and adopted better methods.

At the time of which I make mention I bred in the fall nine fine large brood sows. They ran in the sugar orchard and had plenty of exercise, but I allowed them to sleep together most of the winter. It being cold some of the time, they naturally crowded each other in their



Here's Where it Tells.

It isn't a question of sentiment whether or not your cows are in the pink of condition—but it does make a big difference in your bank account. Since you are keeping cows for milk instead of for meat, better see to it that their milk-producing organs are kept working normally.

At the first sign of decreasing milk-flow, look for the cause. Ten to one it is due to some trouble with the digestive or genital organs, and such disorders are best set right by the use of Kow-Kure, a cow medicine backed by twenty years of success. Try Kow-Kure on your poor milkers and watch results. Hundreds of doubting cow owners have been convinced that this old remedy has no equal for the prevention and cure of Abortion, Bunches, Retained Afterbirth, Milk Fever, Lost Appetite, Scouring, Bunches, etc. Buy Kow-Kure from your feed dealer or druggist; 50c. and \$1.00.

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More calves in the milk. Blatchford's Calf Meal has been raised on other milk substitutes and on all 100 lbs. makes 100 gallons of milk. It costs only one-third as much as milk. Prevents scouring and insures the calf's maturity of sleek, handsome calves. It is steam-cooked and no trouble to prepare or use.

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Grinds hay and two kinds of grain at one operation, such as Alfalfa, Clover, Cowpea Hay, Head Kaffir, etc., separately or mixed with Ear Corn, Shelled Corn, Oats, Barley, Rye, etc. Capacity, 500 lbs. hay per hour. Corn, 20 to 30 bushels per hour. Small grains in proportion. 4 to 5 horse power.

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Can You Put "A.R.O." After Names of Your Cows?

T. E. LEIPER, Colorado Agricultural College

At one time the fact that "Bossie" had a pedigree was significant enough for her admittance to admiration of her owner. But the old adage "The world will not ask who you are; it will ask 'What can you do?'" is just as true for "Bossie" now as for anybody else. Advanced Registry tells what "Bossie" can do.

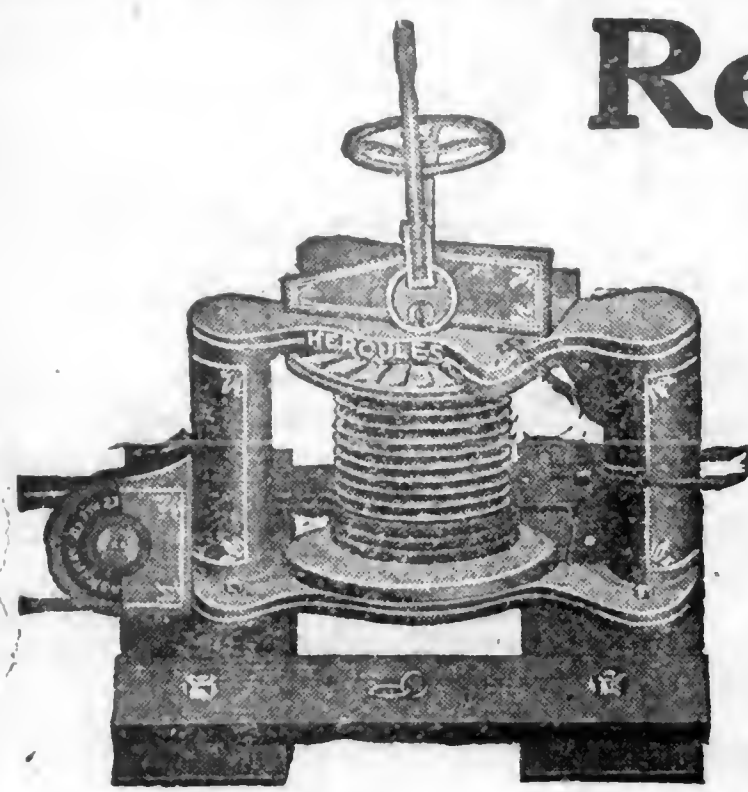
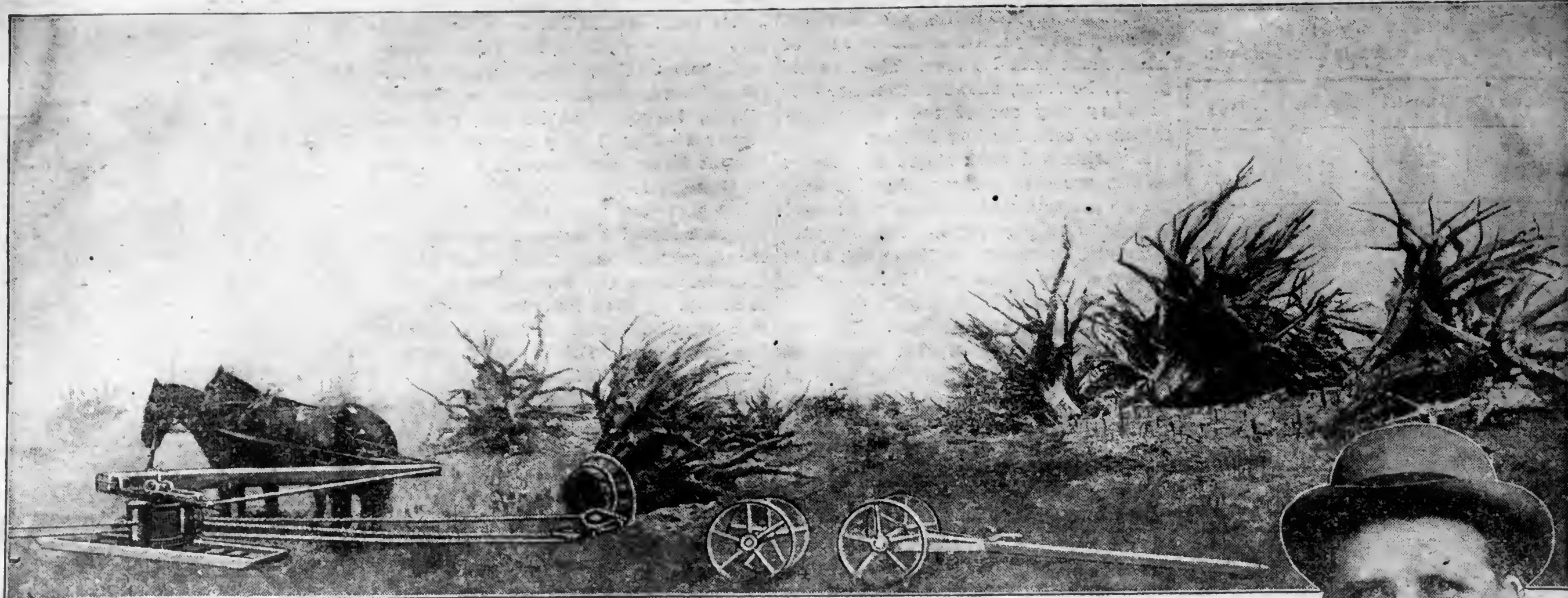
"An advanced register is a herd-book within a herd-book, based upon individual merit and designed as an aid to improvement within the breeds. Any animal that has been recorded in the herd book may, on showing the required degree of merit, be advanced, the ad-

vancement being indicated by entry in the Advanced Register."

There are three essentials necessary for the carrying on of advanced registry work, namely, the barn sheet, milk scales, and a Babcock tester. The combination of these three things together with a good dairyman builds a firm foundation for the successful breeding and selecting of the dairy herd, guarantees a reasonable profit and insures quicker and better sales.

Below is a condensed table giving the requirements for entry in advanced register for cows and bulls of the three leading breeds of dairy cattle:

COWS			BULLS		
	Length of Test	Calving at 2 Years Old Requires			
Holstein	7 Days	7.2 Lbs. Fat	4 A. R. O. Daughters		
Guernsey	365 Days	250.5 Lbs. Fat	2 A. R. O. Daughters		
Jersey	365 Days	220.5 Lbs. Fat	3 A. R. O. Daughters		



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Hand-Power
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My book shows actual photographs and prints actual letters from many owners, telling of the remarkable feats of the Hercules—how it pulls any size stump, green tree or hedge in less than five minutes—how it

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is the puller that has the single, double and triple power features, giving you three machines in one. One man with a team can handle it and move it from place to place. No heavy lifting. The new portable is equipped with a solid steel bedplate and broad steel wheels. There isn't a stump, green tree or hedge grown that the Hercules won't pull out without straining or breaking any castings. It's the low-down constructed puller that has self-anchoring and stump-anchoring features—the one with double safety ratchets that insure the absolute safety of men and team. I want to send you a Hercules on

more will surely follow because of Hercules quality and efficiency. So I can easily afford to sacrifice my profit on the first machine in each locality. Take advantage of this big profit and big saving opportunity now. Besides my 30 days' free trial offer and money-saving price I give you a

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that means something. The all-steel construction, the triple-power feature that saves your team and gives a tremendous increase of power, the double safety ratchets and the careful turning and grinding of every part—all these things make it safe for us to guarantee the replacement of any casting of a Hercules that breaks any time within three years, whether it is the fault of the machine or your fault.

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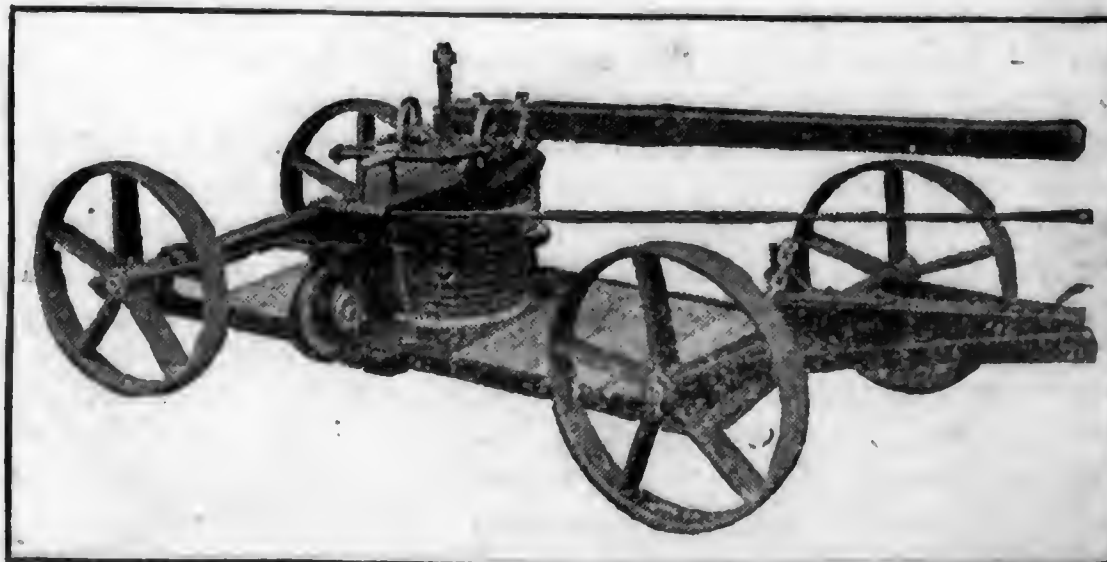
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